DOCUMENT RESUME

ED 180 595	PS 011 026

AUTHOR	Busch, Nancy Ann: Peters, Donald L.
TITLE	Parental Development in First-Time Mothers of Handicapped, At-Risk and Normal Children. Final Report, July 1, 1978 through August 31, 1979.
INSTITUTION	Pennsylvania State Univ., University Park. Coll. of Human Development.
SPONS AGENCY	Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
BUREAU NO	443AH80013
PUB DATE	1 Nov 79
GRANT	G007800005
NOTE	196p.: Pages 143 through 151 of the original document are copyrighted and therefore not available. They are not included in the pagination
EDRS PRICE	MF01/PC08 Plus Postage.
DESCRIPTORS	Anxiety: Beliefs: Changing Attitudes: *Comparative Analysis: Expectation: *Handicapped Children: *Infants: Mothers: Motivation: Neonates: *Parent Attitudes: Parent Role: Personality: Self Concept: *Socioeconomic Influences: *Special Health Problems

ABSTRACT

The two studies reported in this paper explored parental development in first-time mothers of handicapped, at-risk, and normal children. Measures of personality, motivation, belief system, knowledge of infant development, and anticipatory socialization (knowledge, beliefs or expectations of parenting) were used to examine differences between the groups of mothers and to assess the effects of socioeconomic status. Because the project used a short-term longitudinal design, intraindividual changes across time were also examined. The first study was designed to yield information about changes in first-time mothers during late pregnancy and the first few months of a child's life. Since the number of mothers of at-risk children in the first study was too small to provide a generalizable idea of the parents of handicapped children (N=6), the second study was included to provide a larger sample of mothers (N=42) and a control for repeated testing. Mothers in the second study began participation after the birth of their child. Results showed maternal changes across time in the variables of anxiety, self-sentiment, home parental sentiment, superego, knowledge and expectations. Differences in the means of the low- and middle-SES mothers were found for seven of the ten variables used. Mothers of normal and handicapped children were found to differ on career sentiment and expectations while mothers of at-risk and normal children showed very similar patterns of parental development. Other results are presented in detail and implications are discussed. Materials related to the administration of the study, information about the classification of handicaps and risk, and data in tabular form are appended. (JMB)

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED180595

DIVISION OF INDIVIDUAL AND FAMILY STUDIES

Parental Development in First-Time Mothers of Handicapped, At-Risk and Normal Children

Final Report
August 31, 1979

Nancy Ann Busch, Ph.D.
Project Co-Director

Donald L. Peters, Ph.D.
Project Co-Director

College of Human Development
The Pennsylvania State University

PS011026

Bureau of Education for the Handicapped
Office of Education
Department of Health, Education, and Welfare

Grant number: G-00-78-00005
Project number: 443A H 80013
Grant authority: CFDA 13.443A
Dates: July 1, 1978 - August 31, 1979
Amount: $18,219

November 1, 1979

COLLEGE OF
HUMAN DEVELOPMENT
PENNSYLVANIA STATE UNIVERSITY
UNIVERSITY PARK, PA. 16802

Executive Summary

Parental Development in First-Time Mothers of Handicapped, At-Risk, and Normal Children

Nancy Ann Busch
Donald L. Peters

The following information summarizes the research project submitted as a thesis to the Graduate School at The Pennsylvania State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy. The study was funded and conducted from July 1, 1978 through August 31, 1979 under grant #G007800005, Bureau of Education for the Handicapped.

Purpose of the Research

This project examined the changes in personality, motivations, belief systems, knowledge of infant development, and parental expectations that occur during the early months of parenthood. Changes in mothers of handicapped, at-risk, and normal children were compared. The handicapped children in this study experienced mental or motor delays due to congenital anomalies, such as Down's syndrome, meningomyelocele, hydrocephalus, and heart defects. Children were defined as at-risk if they required an extended hospital stay and supervision in an intensive care nursery after birth.

This research reflects trends within developmental psychology and special education. During the last decade, researchers in developmental psychology rediscovered the fact that children can cause changes in adults as well as adults causing changes in children. Not well elaborated, however are the implications of the parent's existence as a person before the presence of the child. An examination of parental variables can delineate the precursor's of caregiving behaviors. These antecedents might include such things as parental personality, motivations, and knowledge.

A major trend within special education is the ever increasing involvement of parents in programs. The Education for All Handicapped Children Act, Public Law 94-142, mandates parental involvement in the educational process of the handicapped child. Although the law covers children above three years of age, the implication for parental participation in infant programs appears clear. Many intervention programs for handicapped infants already use parents as the primary change agents. Indeed, there are data to indicate that the most effective basis of any infant intervention program is the parents (Bronfenbrenner, 1974; Tjossen, 1976). However, we have not adequately understood or given full support to the parental role when handicapped children are involved. Little is known about what these parents bring to the intervention programs in terms of such things as their motivations or biases. In addition, there is little documentation of the changes parents normally go through in adjusting to parenthood.

Procedure

This project consisted of two studies. The first study was designed to yield information about changes in first-time mothers during late pregnancy and the early months of a child's life. Thus, the mothers were first assessed prenatally, and follow-up tests were done after the birth of the child. Because of the difficulties of predicting before birth which children will have a handicap or be at risk, the number of mothers of at-risk children in the first study was too small to provide a generalizable idea of the parents of handicapped children. Therefore, a second study was included to provide a larger sample of mothers and a control for repeated testing. First-time mothers in this study began participation after the birth of their child.

Sample for First Study

The subjects for this study were drawn from the population of pregnant women visiting the prenatal clinic at a large university hospital in a low-income, urban area. These women had a greater than average chance of having a handicapped or at-risk child due to maternal age, health, or education. The use of this population thus maximized the potential number of mothers of at-risk children. Every first-time mother visiting the clinic during the period of the study was asked to participate in the study. Completed measures were obtained from 115 women in the first phase of the study.

Sample for Follow-ups

Twelve mothers of children who had a birth defect or required extended supervision in the intensive care nursery participated in some of the follow-up sessions. Six such mothers completed all of the testing sessions. Twenty mothers with normal, healthy children also participated in follow-up testing with completing all testing sessions. The six mothers of at-risk children and six of the mothers of normal children who completed all sessions, were matched on the variables of marital status, age, education, and where possible, sex of the baby.

Measures

Personality. The personality of the mothers was assessed using the Self Analysis Form, also known as the IPAT Anxiety Scale (Cattell, 1976). The forty items on this test represent the components of anxiety as determined by Cattell and his colleagues: tension (Q4), guilt proneness (O), ego strength (C), trust (L), self-sentiment (Q3). The total score on the Anxiety Scale provides an index of the second order factor of anxiety (Q II).

Motivation. The motivation of the mothers was assessed with the short form of the Motivation Analysis Test (Cattell, Horn, Sweeny, & Radcliffe, 1964; LMAT, 1975). The LMAT uses two objective devices, use of resources and paired words, to assess motivation. In this form test responses are less susceptible to distortion than questionnaires or checklists of interests. The test yields scores on five sentiments which were used in this research: career, sweetheart-spouse, home-parental, super-ego, and self-sentiment.

Anticipatory Socialization Measures

No well-established measures of parental knowledge, beliefs, or expectations were available, so revisions were made to appropriate measures. These measures were then tested for reliability and/or validity with a pilot sample. The pilot sample consisted of 13 middle-class mothers of nonhandicapped children, ages 0 to 5 years, 15 low-income mothers from the clinic at the university hospital, 12 mothers of handicapped children in infant stimulation programs, and 11 advanced students of child development. Reliability was assessed using measures of internal consistency, either coefficient alpha or K-R 20.

Parent Beliefs. Parent beliefs were determined using modification of the Teacher Belief Inventory (Verma, 1973). Items from the Verma scale which referred only to classroom practices were dropped and references to teachers were changed to parents. Pilot testing was done with twenty items to tap opinions concerning parental behavior and how children develop. Ten items were kept after pilot testing. On the basis of this inventory, mothers received two scores. One indicated their agreement with operant principles; the other indicated agreement with child development ideas. The coefficient alpha for the pilot sample (N=42) for the development beliefs was .60; for the operant beliefs, it was .82. As a check for construct validity, the Pearson product moment correlation of the two scores was obtained, $r = -0.18$. This slight negative correlation was consistent with the original scale of Verma.

Knowledge. The Knowledge of Infant Development Scale (KID) (Dusewicz, 1973) assesses knowledge of concepts relating to infant development Eight items about atypical development were added to the scale and four items which dealt only with school situations were dropped. With these modifications, the scale had a KR 20 reliability of .89 (N=43).

Parental Expectations. Jensen and Kogan (1962) devised a scale to assess parental estimates of the abilities and future achievements of their cerebral palsied children. Using this as a basis, a thirty-item questionnaire was developed to examine parental expectations about nonhandicapped children as well. Ten areas are covered by the scale: self-care, education, schooling, literacy, employment and income, social interaction, mental ability, physical ability, physical skills, and family management. In each domain, one item represented below average expectations, one item represented average expectations, and one item represented above-average expectations. In the pilot study this scale had a KR 20 reliability of .92 for the total sample (n=41). To check the construct validity of the scale, the scores of mtohers of children with diagnosed handicaps, e.g., Down's syndrome and cerebral palsy, were compared to the scores of mothers of nonhandicapped children. A one-tailed t-test for independent samples showed a significant difference between the means, $t\ (23) = 8.34$, $p < .001$. The difference was in the expected direction since mothers of handicapped children had lower expectations than mothers of normal children.

Method-Study One

The research project was explained to each first-time mother during a visit to the prenatal clinic late in the second trimester or early in the third trimester, and her participation was requested. If the woman agreed to participate each of the five measures was administered which required approximately one hour of time. For most subjects the measures were administered orally, while they read a copy of the scale. If the women asked, they were allowed to complete the measures on their own.

Birth records were obtained for these first-time mothers. All mothers whose child had a birth defect or required more than 24 hours care in the intensive care nursery were classified as mothers of at-risk children. Ten of these mothers were available for follow-ups in the maternity ward, two to three days after birth. At this time the Self-Analysis Form, the LMAT, and the parental expectations scale were administered. All 20 mothers in the control group were also tested in the maternity ward.

In the first 3 months following the birth of the child, the mothers of at-risk children and control mothers were followed-up twice, once 5 to 6 weeks postnatally and again 3 months postnatally. During the postnatal session, at 6 weeks the personality and motivation measures were administered. During the last testing session, all five measures were administered. Six matched pairs of mothers of at-risk and normal children completed all four testing sessions.

Sample for Study Two

The purpose of the second study was to provide greater external validity for the project as a whole. In addition to having a small sample size, the first study tested mothers who were at risk and have an at-risk child. These high-risk mothers were a select group and thus, did not provide a source of generalizable data.

Fifty-one primiparous mothers of children under 4 months of age with diagnosed handicaps or who were at risk were located through infant stimulation programs and through referrals from physicians. As in the first study, children were considered at-risk if they required services in the intensive care nursery for longer than 24 hours. Fifty-one first-time mothers with children under 4 months of age with no apparent problems were located through advertisements, childbirth education classes, and physicians.

The 42 mothers of at-risk and handicapped children who completed at least two testing sessions were matched with 42 mothers of normal children. The matching variables were marital status, mother's age, mother's education, and where possible, sex of the child. *t*-tests for dependent samples were used to compare the differences between the means in the matched pairs. Only the difference between the education of mothers of normal children and mothers of at-risk children means was significant ($t(31) = 3.13$, $p < .01$). This was not felt to be a crucial difference since it represented less than one year's difference in schooling at the college level. However, the measures were correlated with education as a precaution.

Control for Repeated Testing. Although both mothers of at-risk children and control mothers were experiencing the same repeated testing, a check on the effects of repeated testing was considered important if the data were to show normative changes in first-time mothers. Accordingly, 33 mothers from the same childbirth education classes as the control mothers served as controls for the repeated testing.

Measures

The measures for this study were the same as those used in the first study.

Method-Study Two

Mothers of handicapped or at-risk children were contacted by letter and then by phone as soon as possible after birth. The study was explained to the control mothers in childbirth education during one of the classes. Those first-time mothers who expressed interest in the study were contacted by phone approximately two weeks after their expected delivery date. The other control mothers were approached by letter and/or a phone call. If the mother agreed to participate, the first testing session was scheduled in the mother's home. If a convenient time could not be arranged, or if the mother lived too far away, the first questionnaires were mailed. All five questionnaires were administered during this first session.

The second testing session occurred one month after the first. At this time, the personality and motivation measures were again administered. The tests were administered orally over the telephone to three mothers who requested this during the first testing session; the remainder of the tests were mailed. Forty-two matched pairs completed the second session.

Thirty-five matched pairs completed the third testing session, one month after the second. All five measures were again administered orally to three mothers and mailed to the remainder.

The controls for repeated testing were contacted by phone when their children were between 4 and 6 months of age. All five measures were mailed to those who agreed to participate. Completed questionnaires were received from 34 mothers.

Results and Discussion

Study One

The first analyses for study one were used to test the representativeness of the follow-up sample. The first-time mothers of normal children who were followed were not different from other first-time mothers in the clinic, except in career motivation. The women who later were to have at-risk children were different prenatally from the total population on the variables of self-sentiment, knowledge, and developmental beliefs. Since self-sentiment is positively correlated with age (Cattell et al., 1964) and developmental beliefs and knowledge are correlated with education (see below) this finding reflects in part the slightly higher (but not statistically significant) age and educational level of the mothers of risk children.

A difference between the means of normal and at-risk children was found for the variable of self-sentiment, with mothers of at-risk children having greater self-sentiment. Since these mothers had higher self-sentiment prenatally than the total sample, they may be a select sample. It may also be true that their higher self-sentiment was both cause and effect of the successive outcome of their children's medical crises.

The finding of no time differences must be understood in relation to the design of the study. The completely crossed ANOVA is an extremely powerful statistical test. However, the small size of the sample available for follow-ups (n = 6) greatly reduced the power. Thus, there might well have been time differences which this project was unable to detect.

Correlations. In looking at the patterns of covariation among the three measures at different times, the first finding of importance is the lack of significant stabilities for the measures, although the ANOVA's and follow-ups did not reveal any time differences. Anxiety in the mothers of risk children is the exemption to this finding. However, self-sentiment in these mothers was not at all stable across time, nor were expectations in either group.

The two groups had different patterns of correlations between the different measures. In the control group higher prenatal expectations were related to higher self-sentiment at time 4, sharing 32% of the variance. Higher anxiety at time 3 was related to higner expectations at time 4 (76% shared variance). However, in the mothers of at-risk children, there was a different pattern for parental expectations. This finding suggested that women who had higher anxiety prenatally and in the maternity ward (34% shared variance for both). Expectations at time 4 were not related to anxiety or self-sentiment at any of the four times. Self-sentiment at time 2 was related to anxiety at time 4 (56% shared variance) for these mothers.

Study Two

In examining differences between mothers of normal, at-risk, and handicapped children, a group difference was found for the variable of operant beliefs. Mothers of handicapped and at-risk children had higher operant beliefs than mothers of normal children, suggesting that mothers find operant principles more appropriate for atypical children than for normal children.

When the total sample was divided into two groups: matched pairs of mothers of at-risk and normal children and matched pairs of mothers of handicapped and normal children, group differences were found for the variables of parental expectations and career sentiment for the mothers of handicapped and normal children. Mothers of handicapped children had lower expectations for their children and higher career sentiment at the last session. These group differences accounted for approximately half of the variance of the variables of career sentiment and parental expectations.

Other group differences are more conspicuous by their absence, particularly for the variables of anxiety and self-sentiment. The discrepancy between this absence and earlier research findings may be explained in two ways. First, the group differences may come later. The other researchers studied mothers of preschool- and school-aged children. In contrast, the mothers in this study had less than 6 months of interaction with their children. Maternal recognition of the awesome responsibility of caring for a handicapped child may come later and lead to group differences then. A second explanation may be that that some of the earlier research was done with select samples, those mothers who were in need of psychoanalytic counseling. These samples appear to predominate in the psychoanalytic case studies and give a biased picture of the development of mothers of handicapped children. This study supports the ideas of Barsch (1968) and Hewett (1970), and the findings suggest that most mothers of handicapped children show a normal pattern of development during their children's early months.

Time Differences. The findings of significant changes across time should be examined in light of the effect of repeated testing. The only significant effect of the repeated testing was to raise developmental beliefs, but these beliefs did not show significant changes across time. Since none of the other variables were affected by repeated testing, the changes across time may be interpreted without adjustments. Time differences were found in knowledge and expectations (total sample), anxiety and self-sentiment (mothers of risk and normal children), and operant beliefs and knowledge (mothers of handicapped and normal children).

These time differences suggest that the transition to parenthood can be a source of change. However, for the personality and motivation variables, time accounts for little of the variance, 13% to 16%. For the variables which were more child-related, i.e. the anticipatory socialization variables, and for the pairs of mothers of handicapped and normal children, time accounted for much more of the variance, 68%. This finding suggests that the child-related variables are more susceptible to time changes when the anticipatory socialization is ineffective, i.e. when the child is handicapped. However, the lack of group differences in these particular variables modifies this suggestion, unless the small sample size resulted in too little power to reveal group differences. For the total sample, the variance accounted for by time changes in the anticipatory socialization variables was similar to the pattern in the personality and motivation variables, 11% and 19%.

Patterns of Correlations. When examining the covariations between measures two difference emerge. First there is a difference in the stabilities of the measures. For the mothers of normal children, all of the stability coefficients were significant, most were above .50, and the lowest was .34. For the mothers of at-risk children, the pattern is similar except for the variable of self-sentiment which has stabilities from .09 to .35. The pattern is very different for mothers of handicapped children, even accounting for the small sample size. Self-sentiment in these mothers is fairly stable, but home-parental sentiment, superego, and developmental beliefs are not.

The second difference is in the patterrs of interrelationships among the variables. For the mothers of normal children, the anticipatory socialization variables are all interrelated. Knowledge, developmental beliefs and expectations are positively related to each other and negatively related to operant beliefs. This cluster is positively related to education and negatively related to career sentiment. The pattern was somewhat similar in mothers of risk children, except that expectations were not interrelated and superego was negatively related. At the first testing session, the expectations of these mothers were related to self-sentiment. Since self-sentiment changed over time, it is not surprising that expectations were not related to self-sentiment at other times.

For the mothers of handicapped children, the cluster is not the same. Knowledge was not related to beliefs, either developmental or operant (except knowledge 1 to operant 3), or to expectations. Anxiety at time 1 however was positively related to operant beliefs at time 3 and negatively related to knowledge at time 3. The initial expectations of these mothers positively related to career and home-parental sentiments and negatively related to self-sentiment. Career sentiment, in turn, was negatively related to self-sentiment and sweetheart spouse sentiment, and home-parental and self-sentiments were negatively related to expectations at time 3. Although these correlations cannot show causality, they are time-ordered, and thus, a description of the development of mothers of handicapped children may be proposed. The initial expectations of these mothers are lower than mothers of normal children, suggesting that their estimations about their children's futures were revised after the birth of the handicapped child. High initial expecations led to a decrease in self-sentiment over time, possibly because the baby did not meet the mother's expectations, as in Goldberg's (1977) model. Self-sentiment increased over time when the initial expectations were low suggesting that low initial expectations preserved the mother's feelings of competence. In turn, high self-sentiment depressed expectations over time, while low self-sentiment kept expectations high.

Comparison of Study One and Study Two

The comparison of the middle and low-SES mothers revealed SES differences for seven of the ten variables: sweetheart-spouse sentiment, home-prenatal sentiment, superego, expectations, developmental beliefs, operant beliefs, and knowledge. There were SES differences in anticipatory socialization for parenthood and agrees with the numerous findings of SES differences in child-rearing. SES, however, is iteself a cluster of variables which describe, but do not explain the differences. SES groupings may reflect such things as income levels, education, cultural mores, marital status, and child-rearing attitudes. This cluster obviously overlaps with the anticipatory socialization variables in this study, so it is not surprising to find SES differences in them.

Low-SES mothers were higher in home-parental sentiment while middle-SES mothers were higher in sweetheart-spouse sentiment. These differences may reveal two different support systems in these groups. The low-SES mothers often lived with their mothers, and the grandmothers often took responsibility for infant care. In contrast, the middle-SES mothers were more likely to have husbands to provide social economic and emotional support. The difference in superego sentiment (which is an index of conscience development) may be helpful in explaining the SES difference in authoritarian vs. democratic child-rearing. Further research is required to examine the association between the SES differences in this study and the SES differences in other research.

Group and Time Differences. The only difference between mothers of at-risk children and mothers of nonrisk children was for the variable of developmental beliefs. The absence of differences reflects the lack of differentiation of at-risk and handicapped children which revealed group differences in Study Two. There might also be differences if classification were made on the outcome of the crisis which resulted in an at-risk classification.

The finding of a main effect of time for self-sentiment and the significant effects of time in the follow-up tests for home-parental sentiment, superego expectations, developmental beliefs, and knowledge support the idea that parenthood is a source of change for first-time mothers. These time differences also imply that the ANOVA of the first study did, indeed, lack statistical power to show changes across time. With a larger sample size, the ANOVA which compared the studies was powerful enough to show the time difference.

Suggestions for Further Research

The major limitations of the two studies were small sample sizes and the short time period. Further research should try to increase the number of low-income mothers and mothers of handicapped children. In addition, maternal assessment should begin during early pregnancy and continue through the early years of the child's life. Some assessment of the infant should also be made.

For mothers of handicapped children, there are additional reasons for larger samples and longer time periods. Larger sample sizes may permit the examination of the effect of different disabilities. Longer time periods would allow the inclusion of handicaps which are diagnosed or occur later. In addition, the inclusion of multiparous mothers of handicapped children can more clearly distinguish between the adjustment to parenthood and the adjustment to having a handicapped child.

Summary

The findings of this research suggest parenthood may indeed be a source of developmental change. Both personality and motivation variables changed across time in the paris of mothers of normal and risk children. The lack of time differences in the pairs of mothers of normal and handicapped children may be the result of a decrease in power resulting from the small sample size. However, it may also be the result of differing patterns of parental development, which over the short time studied did not bring significant group differences. The correlations of the measures suggest that there is a different pattern of relationships for the mothers of handicapped children. When extended across time, this pattern could result in lower self-sentiment as has been found by other researchers. The group differences between mothers of handicapped and normal children which were found in career sentiment and expectations support this differing pattern of parental development. The lack of group differences between mothers of normal and at-risk children suggests that mothers of at-risk children were not influenced by their child's "riskness." In the terms of contextual model, they were not sensitive to their children's deviance.

The anticipatory socialization variables were a cluster, along with career sentiment and education. This cluster is fairly stable and well-defined for mothers of normal and at-risk children. For mothers of handicapped children, the anticipatory socialization has not been efficient because of the unforeseen birth of a handicapped child. Thus, the anticipatory socialization variables do change over time. The cluster of motivation variables and expectations also suggests a pattern of parental development which is in keeping with Goldberg's (1977) model and with the contextual approach of this research.

Differences between the means of the low- and middle-SES mothers were found for seven of the ten variables. The content of the anticipatory socialization variables overlaps with the definition of SES as a construct. The SES difference in anticipatory socialization probably reflects the SES difference found in other research.

The findings of this project emphasize the utility of the contextual approach when considering the development of handicapped children. The contextual model proposes that changes occur on a variety of levels, e.g. the individuals, familial, and sociocultural and that the levels are interdependent. The contextual model thus suggests that the social environment of the handicapped children is as appropriate as studies on the functional limitations of disabilities. Since the mother is a key element of the social environment, research which augments the understanding of maternal development has potential benefits for the child.

Implications for Application

The finding of changes across time in the knowledge, personality and motivations of first-time mothers implies that these variables are modifiable during the very early months of their children's lives. This period thus appears to be a potentially fruitful time for parent education and support. Since most intervention programs serving mothers of handicapped children are concerned with beliefs, knowledge, and expectation, this period is a particularly appropriate time for these programs to modify these anticipatory socialization variables.

The lack of differences between mothers of at-risk and normal children suggests that further examination be made of this nonsensitive social environment of the very young at-risk child. If the nature of the child's risk requires intervention to prevent deterioration, those working with the mother must first realize that she is nonsensitive to her child's deviance. Efforts should be directed toward modifying her awareness before intervention with the child begins.

In contrast to other research on parents of handicapped children, this study found few differences between mothers of handicapped and normal children. This finding is in clear contrast to the earlier findings of differences in anxiety, self-concept, and guilt between mothers of handicapped and normal children (Cummings et al., 1966; Erickson, 1968, 1969; Greenberg, 1979; Goodstein, 1960; McMichael, 1972). The last few years have brought many changes to handicapped children and their families. For example, legislation and litigation has mandated handicapped children's participation in the regular educational process. It also appears that there is a new openness in dealing with handicapped children. Parents are no longer encouraged to institutionalize the child with disabilities. Instead, they are pressured to be assertive, even aggressive, about the rights of their children. Perhaps it is idealistic, but it may be hoped that the finding of few differences between mothers of handicapped and normal children in this study is a valid indication of a new spirit in dealing with families with handicapped children. Professionals should no longer see these families as pathological and in need of therapy as they have often been portrayed in the psychiatric literature. Instead professionals should acknowledge that during the early months of the children's lives, mothers of handicapped and normal children are more alike than they are different. Since the development of mothers of handicapped children is not unique, "mainstreaming" of these mothers is suggested. Many of these mothers are now segregated with other mothers of handicapped children in infant intervention programs. Additional contact with mothers of normal children could reveal that some of their problems, frustrations, and joys are the result of being a first-time mother and not just associated with their handicapped child.

This study also highlighted the problems in defining handicaps for very young infants. Some of the medical disabilities which were classified as handicaps may be corrected through surgery, e.g., heart defects, or controlled with medication, e.g., seizures. Many of the at-risk children will have no apparent problems later in life, while some of the normal children will. If the field of special education is to be truly effective with intervention in early infancy, there must be more flexible definitions of handicapped. This study implies that some handicaps are preventable through intervention in the child's social network, e.g., the prevention of the vulnerable child syndrome through intervention in the parenting process. However, noncategorical definitions of handicapped are necessary to support such interventions.

In total, the results of this project imply that the early months of a child's life are an appropriate period for parent intervention. Intervention with mothers of at-risk children may modify the potential deterioration of the children. Intervention with mothers of handicapped children might prevent differences between mothers of handicapped and normal children later. Such intervention can make the mothers of handicapped children even more effective change agents for their children.

Plans for Dissemination

The final report has been submitted to the Graduate School at the Pennsylvania State University and will be listed in Dissertation Abstracts International. The thesis and this summary will be submitted to ERIC. A summary has also been submitted to "International Documentation on Rehabilitation Research."

The research reported here has been presented at colloquia at the Eliot-Pearson Department of Child Study, Tufts University, the Institute of Child Study, University of Maryland, and the Department of Human Development and Family Studies, Colorado State University. It will be presented in a symposium at the annual meeting of the National Association for the Education of Young Children in November, 1979.

Finally, three journal articles are proposed: one for the developmental psychology literature, one for the medical field, and one for special educators.

TABLE OF CONTENTS

Page

ABSTRACT . . . iii

LIST OF TABLES . . . viii

LIST OF FIGURES . . . x

ACKNOWLEDGEMENTS . . . xi

CHAPTER I. INTRODUCTION . . . 1

- Definition of Handicapped . . . 1
- Relevance of the Research . . . 2
  - Implications for Application . . . 5
- Overview of the Project . . . 5

CHAPTER II. THEORETICAL AND EMPIRICAL BACKGROUND . . . 7

- Theoretical Perspectives . . . 7
  - The Psychoanalytic Tradition . . . 7
  - The Total Life Course . . . 10
  - Level of Analysis . . . 12
  - Life Events . . . 15
- Model of This Research . . . 17
  - Definition of Development . . . 18
  - An Application of the Contextual Model . . . 20
- Empirical Background . . . 28
  - Adjustment to Having a Handicapped Child . . . 29
  - Development of Parents . . . 42
- Summary and Objectives . . . 51
  - Objectives . . . 52

CHAPTER III. PROCEDURES . . . 54

- Sample--Study One . . . 54
  - Sample for Follow-up Testing . . . 55
- Measures--Study One . . . 56
  - Personality . . . 56
  - Motivation . . . 57
  - Anticipatory Socialization Measures . . . 58
- Method--Study One . . . 61
- Sample for Study Two . . . 63
  - Control for Repeated Testing . . . 65
- Measures--Study Two . . . 65
- Method--Study Two . . . 65

CHAPTER IV. RESULTS . . . 68

- Results--Study One . . . 68
  - Follow-up Sessions . . . 70
  - Correlations . . . 74
- Results--Study Two . . . 74

TABLE OF CONTENTS (Continued)

Page

    Group and Time Differences 76
    Effect of Repeated Testing 86
    Correlations Among Variables 86
  Study One and Study Two Comparison 91

CHAPTER V. DISCUSSION 100

  Study One 100
    Representativeness of Follow-up Samples 101
    Follow-up Sessions 102
    Correlations 103
    Summary 104
  Study Two 104
    Group Differences 105
    Time Differences 108
    Patterns of Correlations 110
    Summary 112
  Comparison of Study One and Study Two 116
    SES Differences 117
    Group and Time Differences 119
  Suggestions for Further Research 120
    Study One 120
    Study Two 121
    Summary 124

CHAPTER VI. CONCLUSIONS AND IMPLICATIONS 125

  Changes Across Time 126
  Group Differences 126
    SES Differences 126
    Mothers of Normal, At-Risk, and Handicapped Children . . . 127
  Implications for Application 128

NOTES 131

REFERENCES 132

APPENDIX A. MEASURES 142
  Self Analysis Form 143
  LMAT 144
  Parent Beliefs 145
  Knowledge of Infant Development 146
  Parental Expectations 150

APPENDIX B. EXPLANATIONS TO SUBJECTS 152

  Informed Consent Form--Temple University Hospital 153
  Letters to Parents for Study Two 155
  Informed Consent Form--Pennsylvania State University 157
  Informed Consent Form--St. Christopher's Hosptial 159

TABLE OF CONTENTS (Continued)

Page

APPENDIX C. HANDICAP AND AT-RISK CLASSIFICATIONS 161

At-Risk Categories--Study One 162
Handicaps and At-Risk Categories--Study Two 163

APPENDIX D. MEAN SCORES OF SUBJECTS 164

Table 17. Mean Scores of Mothers at First Session--Study One 165
Table 18. Mean Scores of Six Matched Pairs--Study One 166
Table 19. Mean Scores of 35 Matched Pairs--Study Two 167
Table 20. Mean Scores of Mothers of Handicapped and Normal Children--Study Two 168
Table 21. Mean Scores of Mothers of At-Risk and Normal Children--Study Two 169
Table 22. Summary of Analyses for Effect of Repeated Testing--Study Two 170
Table 23. Mean Scores of Low- and Middle-SES Mothers 171

LIST OF TABLES

Page

Table 1.
Characteristics of Samples for Study One 56

Table 2.
Design of Study One 61

Table 3.
Characteristics of Follow-up Samples for Study Two 64

Table 4.
Design of Study Two 66

Table 5.
Differences Between Means at First Session - Study One . . . 69

Table 6.
Summary of ANOVA's - Study One 72

Table 7.
Correlations of Variables - Study One 75

Table 8.
Summary of ANOVA's for Personality and Motivation Variables in 35 Matched Pairs - Study Two 77

Table 9.
Summary of ANOVA's for Anticipatory Socialization Variables in 35 Matched Pairs - Study Two 78

Table 10.
Summary of the ANOVA's for Personality and Motivation Variables in Mothers of Handicapped and Normal Children - Study Two 80

Table 11.
Summary of the ANOVA's for Anticipatory Socialization Variables in Mothers of Handicapped and Normal Children - Study Two 82

Table 12.
Summary of the ANOVA's for Personality and Motivation Variables in Mothers of At-Risk and Normal Children - Study Two 84

Table 13.
Summary of the ANOVA's for Anticipatory Socialization Variables in Mothers of At-Risk and Normal Children - Study Two 85

LIST OF TABLES (Continued)

Page

Table 14.
Correlations of Variables - Study Two 88

Table 15.
Stability Coefficients for Variables of Study Two 90

Table 16.
Summary of the Analyses for the Comparison of Study One and Study Two 92

Table 17.
Mean Scores of Mothers at First Session - Study One 165

Table 18.
Mean Scores of Six Matched Pairs - Study One 166

Table 19.
Mean Scores of 35 Matched Pairs - Study Two 167

Table 20.
Mean Scores of Mothers of Handicapped and Normal Children - Study Two 168

Table 21.
Mean Scores of At-Risk and Normal Children - Study Two . . 169

Table 22.
Summary of Analyses for Effect of Repeated Testing - Study Two 170

Table 23.
Mean Scores of Low- and Middle-SES Mothers 171

18

LIST OF FIGURES

Page

Figure 1.
Levels of Maternal Functioning During Transition to Parenthood 21

Figure 2.
Levels of Infant Functioning During First Months of Life 23

Figure 3.
Contextual Model of Handicapping Conditions 24

Figure 4.
Two-way Interaction of Time and Group for Anxiety in Study One 73

Figure 5.
Two-way Interaction of Group and Time for Career Sentiment (Study Two) 81

Figure 6.
Interaction of SES and Time for Home-Parental Sentiment 94

Figure 7.
Interaction of SES and Time for Knowledge Score 95

Figure 8.
Interaction of Time, Group, and SES for Superego 96

Figure 9.
Interaction of Time, Group, and SES for Expectations . . . 98

Figure 10.
Interaction of Time, Group, and SES for Developmental Beliefs 99

19

ACKNOWLEDGEMENTS

This project was supported by grant G007800005 from the U.S. Office of Education. In addition, support from a graduate school fellowship from the Pennsylvania State University and the PrePAIR training grant from the Bureau of Education for the Handicapped gave me the opportunity to pursue this research full-time. I wish to acknowledge the assistance of a great many people whose cooperation made this project easier. My thanks to the members of my committee, Don Peters, Carol Cartwright, Richard Lerner, and John Nesselroade for their support from the very first stages of writing the grant proposal through the final revision. I am also grateful to my fellow PrePAIR trainees who were never too busy to share ideas. This research would not have been possible without the cooperation of the medical personnel at four hospitals: Drs. Daly and Kendall and Nurses Daly and Marshall at Temple University Hospital, Drs. Tyrala and Kistenmacher at St. Christopher's Hospital for Children, and Drs. Meny and Anwar at Raritan Valley Hospital and St. Peter's Medical Center. To them and to their staffs, I extend my thanks. Anne Goldman, Judy Shea, and Ann Belsky served as research assistants. Anne Goldman deserves special recognition for her efforts above and beyond her job description in trying to keep the project going during two strikes at Temple. I am grateful to the mothers themselves for their perserverance in a longitudinal study during a period of many changes in their lives. I appreciate the support of my parents and in-laws, who were always interested in the study and understood when I had to work instead of visit. Finally, no words

can express my gratitude to my husband, who scored tests, punched data, encouraged, consoled, and endured my monthly desertions to State College. What a way to start a marriage!

CHAPTER I

INTRODUCTION

The purpose of the research presented here was to examine the changes in personality, motivations, belief systems, knowledge of infant development, and parental expectations that occur during the early months of parenthood among first-time mothers who have a handicapped child and among those who have a child who is not handicapped. Two studies were included in the research; one was designed to assess a large sample of high-risk mothers before they gave birth. Additional tests were given to those mothers who subsequently gave birth to children who were at risk and to matched control mothers whose children had no apparent problems. The other study compared changes in mothers of handicapped and nonhandicapped children starting after the birth of the child and continuing for two months.

Definition of Handicapped

In proposing comparisons between mothers of handicapped children and mothers of nonhandicapped children, there is an immediate need to define the term handicapped. According to the guidelines of the Federal Office of Education, Bureau of Education for the Handicapped,

> Handicapped children means those children evaluated . . . as being mentally retarded, hard-of-hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, other health impaired, deaf-blind, multi-handicapped, or as having specific learning disabilities, who because of those impairments need special education and related services (Education of Handicapped Children, 1977, p. 42478).

However, because the scope of the research included only those handicaps that were diagnosed by three months of age, the handicapped children in this study consisted of those infants experiencing mental or motor delays with an etiology of Down's syndrome and other congenital anomalies such as heart defects, atresia, trachealesophageal fistula, and meningomyelocele. An additional group of children was included in the category of "handicapped" for the purposes of the research. These children were those who were considered medically "at-risk" during the first months of life. They were included because of their greater-than-average chance of developing handicaps later in life (Davies and Tizard, 1975; Sameroff and Chandler, 1975). They were also a relevant group to consider in a study of parental development because of the deviant parenting pattern associated with having an at-risk child (Barnett, Leiderman, Grostein and Klaus, 1970; Bjene and Hansen, 1976; Green and Solnit, 1964; Prechtl, 1961; Rose, 1961). The classification of a child as medically "at-risk" may vary from physician to physician and hospital to hospital. In this research, those babies who required an extended hospital stay and supervision in an intensive care unit were considered at-risk.

Relevance of the Research

The significance and timeliness of the problem of parental development can be traced to ideas in two disciplines: developmental psychology and special education. During the last decade, researchers in developmental psychology rediscovered the fact that children can cause changes in adults as well as adults causing changes in children. Researchers started to examine specifically the way in which the behavior, physical appearance, or tempermant of the child affected the caregiving behaviors of the parent (cf. Bell, 1968, 1971, 1974; Lewis and Rosenblum, 1974). Not well elaborated, however, are the implications of the parent's existence as a person before the presence of the child. An examination of parental variables can serve to delineate the precursors of caregiving behaviors. These antecedents might include such things as parental personality, motivations, and knowledge. Changes in these variables may be caused by interaction with the child. These changes may in turn modify caregiving and interaction patterns, thus suggesting a reciprocal function.

An additional movement within developmental psychology that gave impetus to this research was the life-span perspective (Goulet and Baltes, 1970). When considering the total course of life, some life-span psychologists suggested development was not finalized by adolescence. Instead, they placed greater emphasis on the possibility of developmental change from conception to death. With this perspective, life-span researchers opened the doors to research on changes in adulthood within a developmental framework.

In the field of special education, the Bureau of Education for the Handicapped has identified several priorities for research funding. This research is consistent with the current philosophy in special education as it was designed to meet four of these priorities. The project used an interdisciplinary approach with ideas from special education, human development, psychiatry, psychology, and family sociology. The understanding of maternal adjustment to parenthood can be used to foster parental participation as paraprofessionals in intervention. Parental development was charted during the very early childhood of the handicapped children. Finally, the known handicaps included Down's syndrome and other congenital anomalies which are often associated with multiple or severe handicaps.

In addition to these priorities, another trend within special education is the ever increasing involvement of parents in programs. Federal law has acknowledged the importance of this parental participation. The Education for All Handicapped Children Act, Public Law 94-142, mandates parental involvement in the educational process of the handicapped child as one of its five main tenets. Although the law covers children above three years of age, the implication for parental participation in infant programs appears clear. Many intervention programs for handicapped infants already use parents as the primary change agents. Indeed, there are data to indicate that the most effective basis of any infant intervention program is the parents (Bronfenbrenner, 1974; Tjossem, 1976).

> Finally, the ultimate success of the efforts of early intervention programs depends upon the understanding and participation of parents and families who, during infancy and the early years are the primary mediators of intervention strategies (Krause and Meyer, 1976, p. xxi).

However, as Gorham, des Jardins, Page, Pettis, and Scheiber (1975) suggested, we have not adequately understood or given full support to the parental role when handicapped children are involved. Little is known about what these parents bring to the intervention programs in terms of such things as their motivations or biases. In addition, there is little documentation of the changes parents normally go through in adjusting to parenthood.

Implications for Application

By understanding the development of parents of both normal and handicapped children, special educators should be able to design parent involvement programs that are based upon a knowledge of what is happening to the parent and how to modify that course of events. Currently knowledge of child development is used to assess the well-being of children and to institute remedial measures when the course of development is not optimal. In a similar manner knowledge of parental development can provide a foundation for parent education programs and intervention strategies utilizing parents. In the case where there is evidence that parental development might follow a deviant course (such as rejection of the handicapped child), knowledge of parent development can suggest how to intervene to modify the outcome. Because of the primacy of the parent-child relationship, those things which affect the parent will ultimately affect the child--and such mediation (using the parents) is the most effective way of teaching the infant. Thus, although the focus of this research was the parent, the ultimate benefit should be bestowed upon the child.

Overview of the Project

The theoretical and empirical background of this project is presented in the next chapter. This lays the foundation for the introduction of the objectives of the research that are listed in the last section of Chapter II.

Chapter III outlines the procedure of both studies in the project.

Included in this section are the definitions of the dependent variables (personality, motivations, belief systems, knowledge, and expectations) and the descriptions of the instruments used to measure these variables.

The results from the statistical analysis of the data are summarized in Chapter IV. The data were analyzed for differences between mothers of handicapped and nonhandicapped children, for differences between middle- and low-SES mothers, and for changes across time. Correlations among the measures at different times of testing were also examined.

The discussion of Chapter V interprets the results of this project within the context of the conceptualization of the studies and in relation to associated work. In this chapter the limitations of the study are used to outline suggestions for further research.

The final chapter presents the conclusions which can be drawn from the results and discussion. The possible application of this project's findings are also described in Chapter VI.

CHAPTER II

THEORETICAL AND EMPIRICAL BACKGROUND

The goal of the scientific inquiry broadly known as research is both to generate new ideas and to organize those facts into a coherent framework (Baltes, Reese and Nesselroade, 1977). Thus, the basis of any research program should lie in both the empirical ideas or facts from previous research and in the theoretical foundations of those facts. The purpose of this chapter is to present such a basis for research in parental development. Theoretical perspectives and their underlying model assumptions are outlined first. These assumptions are then organized into a model for this research. Finally previous empirical studies are related to this model to show the derivation of the objectives of this work.

Theoretical Perspectives

In outlining the theoretical basis of this research, it must be noted that few theories of psychological development have specifically examined parenthood. However, two traditions have contributed to our understanding of the role of parenthood in adult development: (a) the psychoanalytic approach of Freud and his followers, and (b) the literature from human development that examines the total life course.

The Psychoanalytic Tradition

Although his clinical population consisted mainly of adults, Freud's theory of personality development is primarily concerned with events during childhood. The psychosexual stages that he outlined stop with the genital stage of adolescence. In addition, the structure (i.e., ego and superego), dynamics (life and death wish), and development (the processes of identification and displacement) of the personality are associated with the unconscious conflicts of childhood and their re-enactment during adulthood (Freud, 1964).

In contrast to Freud's emphasis on childhood and psychosexual processes, Jung (1959) examined the total life course and social processes such as those found in religion and mythology. In his formulation of "analytical psychology," Jung stressed the continual development of man. However, he did not particularly examine the role of parenthood in the process of development. Instead, he emphasized the transition of the person into the "spiritual man" that occurs in the late thirties or early forties.

By coupling the psychosexual stages of Freud and the social processes of Jung, Erikson (1963) devised a series of psychosocial stages that span the life course. He was thus the first psychoanalytic theorist to propose a stage of development corresponding to parenthood. Erikson defined his seventh stage as the conflict between a sense of generativity and a sense of stagnation. In this way he stressed "the dependence of the older generation on the younger one" (p. 266). However, generativity is not automatically accomplished through biological parenthood; there must also be "a libidinal investment in that which is generated" (p. 267). Thus, if the parent of a handicapped child has difficulty relating to that child, the resolution of this stage may be stagnation rather than generativity.

Indeed, parenthood is not even the only route to generativity. Man's relationship to his products is inherent in the ideas of productivity and creativity which Erikson subsumed under the sense of generativity.

The most complete statement on "parenthood as a developmental phase" is that of Benedek (1959). Under the aegis of libido theory, she justified her assumption about the developmental nature of parenthood by outlining how personality development continues after adolescence and operates under the same processes as during infancy and childhood. Benedek called the primary process of parental development "emotional symbiosis" which "describes a reciprocal interaction between mother and child which creates structural change in each of the participants" (p. 392). Just as the infant identifies with the mother, part of the mother identifies with the infant. With positive interactions both the mother and infant establish confidence. However, the mother's motivation occurs on three levels, while the infant's motivations are only on one. Both the infant and mother have motivations in the present; the mother's is reflected in the reproductive drive to nurse and care for the baby. The mother's second level is motivation from the past stemming from her own infancy and relationship with her mother. The expectancy of future gratifications with the child are the third level of motivation.

The motivations from the past are the most potent for parental development. Motherhood allows the mother to once again confront the conflicts with her own mother. When "intrapsychic resolution" occurs, "motherhood facilitates psychosexual development toward completion" (p. 396). However, if her experiences with the baby are negative, this may also stir up earlier conflicts. If reconciliation can occur, a new level of personality development will be achieved. However, her frustrations are also likely to interfere with the integration of personality. Clinically this leads to disturbances in mothering and possible psychopathology such as "over-protecting" or "overpossessing" the child.

Benedek's theory states that in a similar manner fatherhood is also a source of development. The father's identification with the child is "directed more by hope than drive. . . . The father, like the mother, repeats with each child . . . the stress of his own development, and under fortunate circumstances achieves further resolution of his conflicts" (p. 400). The relation between parent and child is thus smooth until the child reaches the developmental level at which the parent has a developmental conflict. The reciprocity which then develops between parent and child is regressive for both parent and child until the parent resolves the conflict.

In a later work, Benedek (1970) proposed that the process of parenthood does not end with the maturation of the children, but "ends only with the death of the parent" (p. 185). At grandparenthood parents relive their developmental memories as evoked by the behavior of their children as parents and their grandchildren as children. In addition parents hold on to the status of parenthood since it is an integral part of their self-esteem.

The Total Life Course

The works of Benedek (1970) and Erikson (1963) are also examples of the second tradition which augments our understanding of the developmental nature of parenthood, work on the total life course.

However, this approach is not identifiable with a particular theoretical orientation. Indeed, some of its roots lie in the psychoanalytic framework (in addition to Benedek, 1970; and Erikson, 1963; cf. Gould, 1972; Levinson, 1978). It also has roots in the type of organismic approach to development exemplified by Werner (1957; cf. Brent, 1978; Havighurst, 1972; Neugarten, 1966), and in comparative psychology (cf. Gutmann, 1975). More important than the theoretical orientation has been the impetus from longitudinal studies. Some of these have started with children, but have followed them across the life course (cf. Sears, 1977; Terman and Olden, 1959); others have started with adults, e.g., the Kansas City Study of Adult Life. However, most of this work is empirical and without a prominent theoretical base.

> It is interesting that so much of this study of human behavior during the adult part of the life span has been done as empirical research, without any attempt to produce or test a theory of development and change during adult life (Havighurst, 1973, p. 13).

The life-span approach "is concerned with the description and explication of ontogenetic behavioral changes from birth to death" (Baltes and Goulet, 1970, p. 12). Buhler (1962) separated the life-span into ten age periods and identified five basic life tendencies. Her age period from twenty-five years to forty-five years is dominated by the basic tendency of creative expansion, and self-actualization in marriage and family are among its concerns. Thus, parenthood could conceivably be a source of development in Buhler's formulation. Similarly, Havighurst placed the developmental tasks of marriage and family life during early adulthood (eighteen to thirty years). The sources of the developmental tasks are biological changes within the body and the expectations associated with social roles (Havighurst, 1972, 1973). Since parenthood is both a biological and social entity, the expectation that parenthood will bring changes is consistent with the ideas of Havighurst. However, none of the life-span researchers provide specifics as to the role of parenthood in adult development.

The examples of works on the total life course can serve to delineate certain characteristics of this approach. Obviously, these researchers are concerned with the whole life-span, from conception (or before) to death. The emphasis is on understanding how development is shaped by events before the period examined and how that period influences the events that follow. In doing so, the life-span approach may examine events on many different levels of functioning, e.g., biological systems or social roles.

Levels of Analysis

The characteristic of using different levels of analysis can be seen in a number of studies on parenthood and parental roles. Gutmann (1975) suggested that the importance of parenthood is clear only when we look at the species meanings of adulthood. By taking an evolutionary and cross-cultural perspective he organized age and sex roles using parenthood as the pivotal stage of the life cycle. His subjects from a variety of cultures stressed the vital importance of parenthood in their lives. From an evolutionary viewpoint, parenthood is the point at which individual and species needs are one. "For most adult humans, parenthood is still the ultimate source of the sense of meaning" (Gutmann, 1975, p. 170). Gutmann used this perspective to define parenthood as a chronic emergency. In order to meet both the physical and emotional needs of the infant, sex roles evolved. As the child grows and the emergency passes, the sex roles can be reversed or transcended.

Thus, Gutmann (1975) analyzed the meaning of parenthood from a cultural and historical, evolutionary perspective. In evaluating Gutmann's ideas, Self (1975) stressed doing analyses on other levels, such as the familial or individual. She suggested that the integration of sex roles and parenthood may have been greater earlier in human evolutionary history or in less developed cultures than it is now in Western cultures. Self also noted that we do not have data to evaluate the importance of parenthood, relative to other life events. As Gutmann (1975) stated,

> We study the routes whereby an infant may come to develop basic trust in the good intentions and continuity of the parent; but we do not study the equally crucial process whereby a new mother, a primapara, comes to trust her own capacity to keep an infant alive after it has been turned over to her care (p. 168).

Support for work on the historical and sociocultural levels also comes from Lerner and Spanier (in press). In evaluating and reformulating Erikson's stages of the life cycle, they stressed examining the stage of generativity and parenthood on a variety of levels. In Erikson's original formulation, generativity was primarily an individual phenomenon. Lerner and Spanier showed that the choice of avenues to generativity is dependent upon historical and sociocultural influences as well as individual development. Traditionally, women attained generativity through the bearing and rearing of children, while men attained generativity through biological fatherhood and careers that supported their families and maintained society.

Traditional roles have been biosocially adaptive, but the question arises as to their adaptive significance in view of historical and sociocultural changes.

Brent (1978) provides an additional analysis of the sociocultural and historical influences on the parental role. He suggested that a dialetic exists between the specialization of the individual and the adaptation of the group. Thus, the younger members of a group create changes in the environment while the older members provide a stable base by efficiently dealing with the existing environment. Brent's ideas suggest that parenthood and generativity are themselves developmental, and that their content changes with the life cycle.

Family sociologists have also studied parenthood on the familial and sociocultural level. Although much of the empirical work was atheoretical, Rollins and Galligan (1978) organized those data into theoretical propositions, some of which are useful here. In their theory of family career transitions and marital satisfaction, the central construct is the idea of "roles strain" which refers to stress within people when they cannot meet the expectations of their roles. These roles are social obligations and demands of a position, e.g., husband or mother. The accumulation of familial roles is one index of the family career. At the beginning of a family, i.e. marriage, there are two roles, husband and wife. With dependent children there are also roles of father and mother for the adults. The accumulation of roles is one possible source of roles strain. Thus, the onset of parenthood brings role accumulation and possible roles strain. With a handicapped or at-risk child there may be an even greater likelihood of roles strain.

Although Rollins and Galligan (1978) did not focus on this, roles strain may also come from roles outside of the family, such as career roles. Brim (1966) suggested that an historical and sociocultural analysis is necessary to understand the socialization for roles and thus, the expectations for roles. In relatively stable societies, role socialization can be more effective through anticipatory socialization. However, such anticipatory socialization cannot insure success in all roles; the marital role is an example. In complex societies role socialization is even more difficult. Factors such as geographical and social mobility may mean loss of contact with significant others and new unforeseen role demands. After this historical and sociocultural analysis, Brim concluded that there is a need for socialization after childhood. "The socialization that an individual receives in childhood cannot be fully adequate as preparation for the tasks demanded of him in later years" (Brim, 1966, p. 18).

Life Events

One hallmark of the life-span approach to human development has also been the examination of "life events." The analysis of these events shows the already mentioned concerns with the level of functioning and the influence of one period on another. Life events can also serve as examples of the effect of world views or metamodels on research, starting with differing definitions. For some researchers these life events are objective external events (cf. Meyer, 1951), while for others they are internal transitions (cf. Buhler, 1962). The difference between these ideas represents a difference in metamodels. Although most of the approaches to life events have been rooted in the organismic model, the ideas of life events can also be consistent with a mechanistic model (Hultsch and Plemons, in press). A life event is universally seen as "a change in the individual's usual activities" (Hultsch and Plemons, in press, p. 20). To go beyond this superficial definition, Hultsch and Plemons suggested looking at event categories, event attributes, and the timing and sequencing of events. Using a mechanistic model they outlined several mediating variables that will influence the reaction of the individual to the life event and for which large interindividual differences exist. Several of these were used as variables in this study: knowledge functions, anticipatory socialization, motivation factors, and coping strategies. The resolution of the event and consequences will depend both on event factors and on the mediating variables.

Using Hultsch and Plemons' outline of the role of life events in development, it appears that parenthood can be considered an individual life event. Any resulting developmental change can have roots in both the individual and in the individual's significant others on the familial and sociocultural levels. The timing of parenthood, e.g., the mother's age, and the sequencing of it in relation to other life events, e.g., marriage or career building, will in part determine the individual's appraisal of the event of parenthood. The mediating variables of knowledge, preparation, motivation, and personality along with the individual's definition of the event will determine the resulting developmental course, such as successful parenting or a breakdown in mothering.

Model of this Research

To understand the model of parental development used in this research it is helpful to first consider the various philosophical metamodels and their role in research. Two world views have already been mentioned. The mechanistic approach emphasizes the reduction of all phenomena to common consistent laws. Continuity and quantitative change are thus hallmarks of development within this paradigm. The organismic approach emphasizes the irreducibility of one level to another; discontinuity and qualitative change are its developmental markers.

There is an alternative world view, that of dialectics or contextualism, that may be able to synthesize the contradictory elements of the mechanistic and organismic paradigms (Pepper, 1942; Riegel, 1975). Contextualism examines many levels of development and their impact upon each other. Although other levels may be differentiated, the important levels for this chapter may be termed the biological, the indivual-psychological, the familial, the sociocultural, and the historical. The contextual model stresses that developmental changes are constantly occurring at all levels. Conflicts or asynchronies between levels are a source of development. A final assumption of contextualism is that changes in one level bring changes in other levels because of the interdependence of levels. The changes in other levels, in turn, serve as feedback and cause changes in the original level.

Many of the assumptions of the contextual model were illustrated in the discussion of life-span research. Thus, the assumptions of different levels of functioning and the effect of one life period on the following periods have been noted. Because of its levels of analyses, the contextual approach is also very compatible with a multidisciplinary perspective.

Definition of Development

As a corollary to their differing assumptions, paradigms have differing definitions. The term, development, has roots in biology where it was coupled with growth. Growth referred to an increase in size while development referred to an increase in complexity (Dileo, 1970). In his orthogenetic principle, Werner (1957) translated this biological idea into a psychological premise as well. This principle "states that wherever development occurs it proceeds from a state of relative globality and lack of differentiation to a state of increasing differentiation, articulation, and hierarchical integration" (p. 126). This principle expresses the unilinearity of development but does not preclude the existence of multiple developmental forms. Thus, human development must be studied not only "in terms of universal sequence, but also in terms of individual variations" (p. 137). These ideas about the definition of development are most often used by organismic researchers, who equate development with qualitative change. For example, in her discussion of adult personality, Neugarten (1966) suggested that personality changes in adulthood are more related to social and situational events than to developmental events. In this way, she defined developmental events as those which have a basis in maturation.

Since mechanists discount the validity of qualitative change, their definition of development would be age-related quantitative change. The work on life events would be called developmental in the mechanistic paradign, as would Brim's (1966) discussion of adult role socialization.

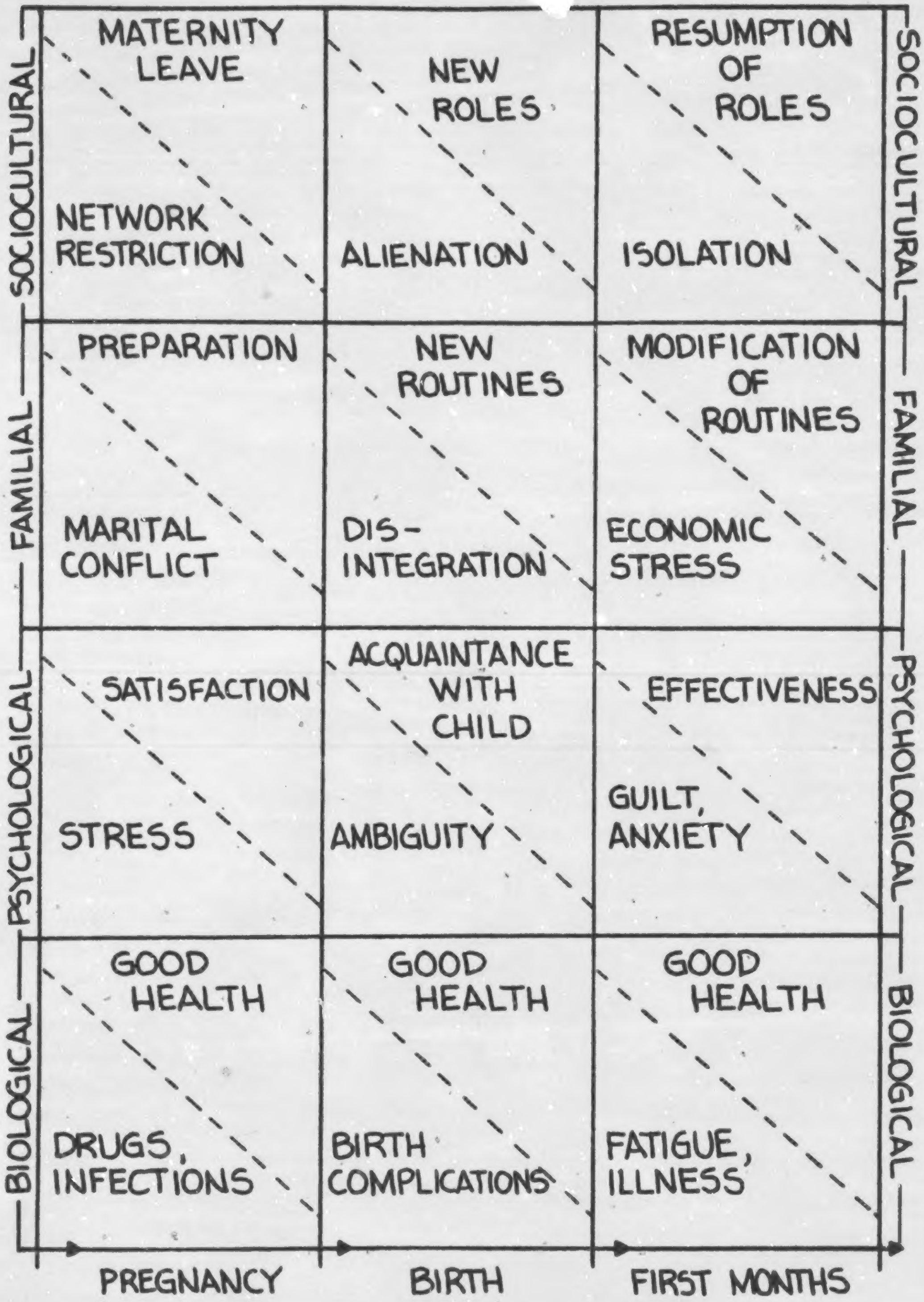
Thus, from the organismic and mechanistic perspectives, some changes in adulthood may not be seen as developmental. However, from a contextual perspective, these changes may be developmental, depending on the level of analysis. For example, from a long-term historical analysis, only those changes resulting in evolution, i.e., which are phylogenetic, may be developmental. However, on the biological level even state changes may be developmental. The time frame will also depend on the level. Thus, chronological age-related changes are appropriate on the individual level while birth cohort or event cohort differences reflect time on the sociocultural level. This research was concerned primarily with the psychological, familial, and sociocultural levels so time-related changes on these levels may be considered development. Thus, role changes are developmental. A more specific definition on the individual psychological level has been suggested by Baltes, Reese, and Nesselroade (1977): "intraindividual changes in behavior across the life span and, . . . interindividual differences (and similarities) in intraindividual change" (p. 4).

Because they are sets of philosophical assumptions, paradigms not only have differing definitions, but differing truth criteria as well. Thus, paradigms cannot be evaluated as "true" or "false." Rather the basis for comparing different metamodels should be a criteria of usefulness (Lerner and Ryff, 1978). A model derived from the contextual paradigm appears to have utility both for understanding parental development and for examining the influence of parental changes on the developing child.

An Application of the Contextual Model

The contextual paradigm and its related assumptions were used in building a model for this research. The first assumption was that parenthood is a potential source of adult development. A corollary assumption is that the transition from nonparent to parent produces intraindividual changes which affect the directions and outcomes of the remainder of life. This notion also implies that there are interdividual differences in the changes. The final assumption is that parent development also influences development on other levels of analysis.

Interindividual differences in parental development may be the result of differing experiences such as the birth of a handicapped child versus the birth of a nonhandicapped child. These different experiences and their results are shown on four different levels in Figure 1. The biological level has been the traditional concern during pregnancy, labor, and delivery. In the normal course of events, the mother's physiological functioning adjusts well to the changes during this period, and she enjoys good health. There may however be insults to her biological functioning, such as drugs and infections. On the psychological and familial levels, the individual mother and the marital dyad must prepare for and adjust to the new demands of parenthood; the result can either be normal, positive changes or atypical, usually negative changes. Even on the sociocultural level parenthood brings changes. The mother may leave her



	PREGNANCY	BIRTH	FIRST MONTHS
SOCIOCULTURAL	MATERNITY LEAVE NETWORK RESTRICTION	NEW ROLES ALIENATION	RESUMPTION OF ROLES ISOLATION
FAMILIAL	PREPARATION MARITAL CONFLICT	NEW ROUTINES DIS-INTEGRATION	MODIFICATION OF ROUTINES ECONOMIC STRESS
PSYCHOLOGICAL	SATISFACTION STRESS	ACQUAINTANCE WITH CHILD AMBIGUITY	EFFECTIVENESS GUILT, ANXIETY
BIOLOGICAL	GOOD HEALTH DRUGS, INFECTIONS	GOOD HEALTH BIRTH COMPLICATIONS	GOOD HEALTH FATIGUE, ILLNESS

Figure 1. Levels of Maternal Functioning During Transition to Parenthood (Positive Outcomes Are Shown on Top, Negative Outcomes On Bottom)

employment and thus lose social contacts.

A corollary of the assumption that there are different levels of development is that changes in one level influence development on other levels. During pregnancy the biological functioning of the mother and child are interdependent. Thus, the insults to the mothers' functioning are also insults to the child, as shown by Figure 2. Indeed, some infections, such as rubella, are relatively minor for the mother, but, depending on the timing, these insults can be potentially devastating for the child. Another way of seeing this interdependence of levels is to note that the child is part of the familial level for the mother and that the mother is part of the familial level for the child. Thus, a child's premature birth may result in the mother's ambiguity over the child's well-being. A specific handicap may result in maternal anxiety or guilt. Even physicians now acknowledge the interdependence of maternal psychological functioning and infant biological functioning. One implication of the work of Klaus and Kennell (1976) is that maternal attachment will affect the baby's later health.

The contextual model can be applied specifically to the development of handicapped children to show the potential influence of maternal development. In Figure 3, these children are seen as having a deviance which makes their functioning at the biological level atypical; in the terminology of Susser and Watson (1971), this is their impairment. Examples of such impairments are limb deformities due to ingestion of thalidomide during pregnancy or prematurity and subsequent hospitalization. Impairments have both response characteristics and stimulus characteristics.

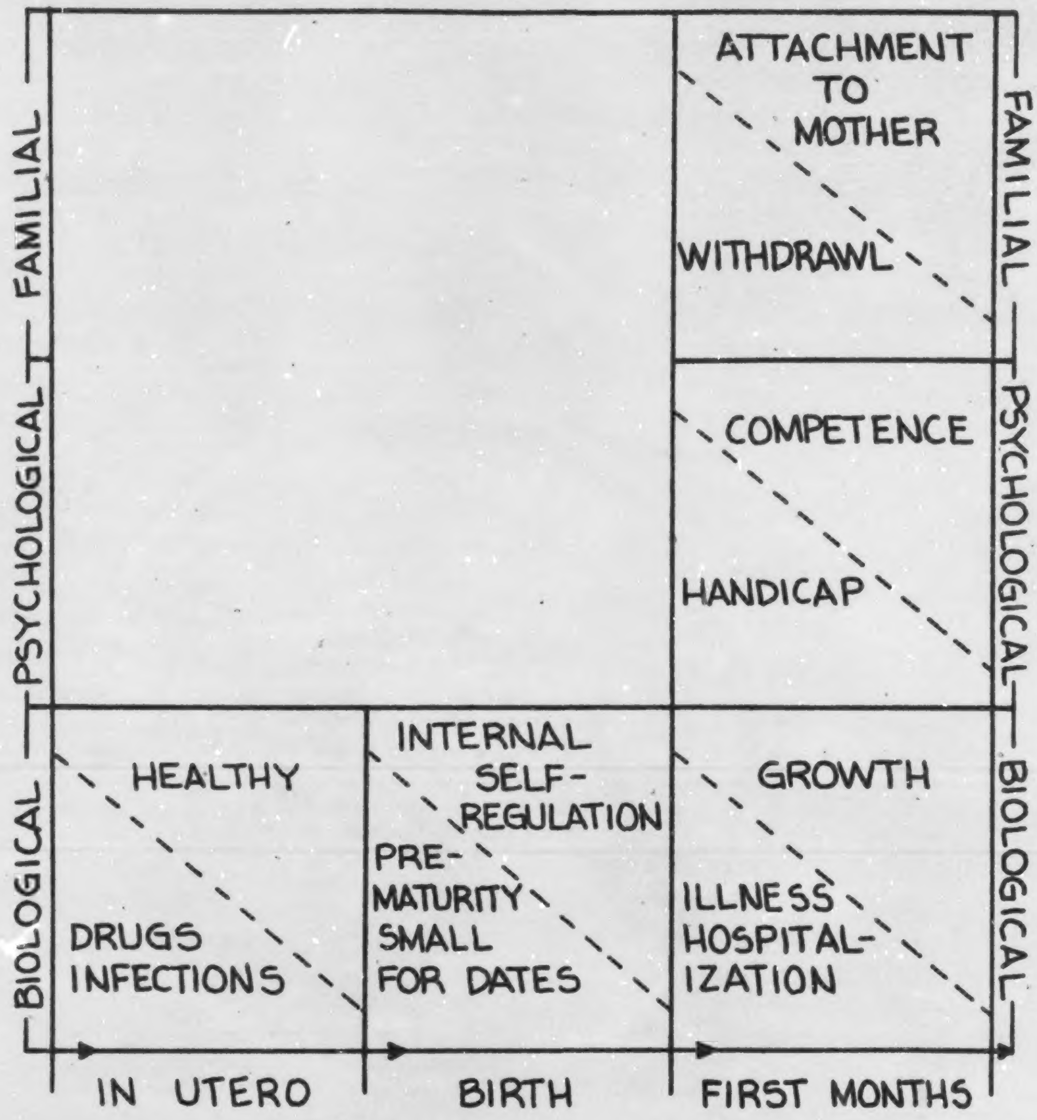

ATTACHMENT TO MOTHER
WITHDRAWL
COMPETENCE
HANDICAP
HEALTHY
DRUGS INFECTIONS
INTERNAL SELF-REGULATION
PRE-MATURITY SMALL FOR DATES
GROWTH
ILLNESS HOSPITAL-IZATION
FAMILIAL
PSYCHOLOGICAL
BIOLOGICAL
IN UTERO
BIRTH
FIRST MONTHS

Figure 2. Levels of Infant Functioning During First Months of Life (Positive Outcomes Are Shown on Top, Negative Outcomes on Bottom)

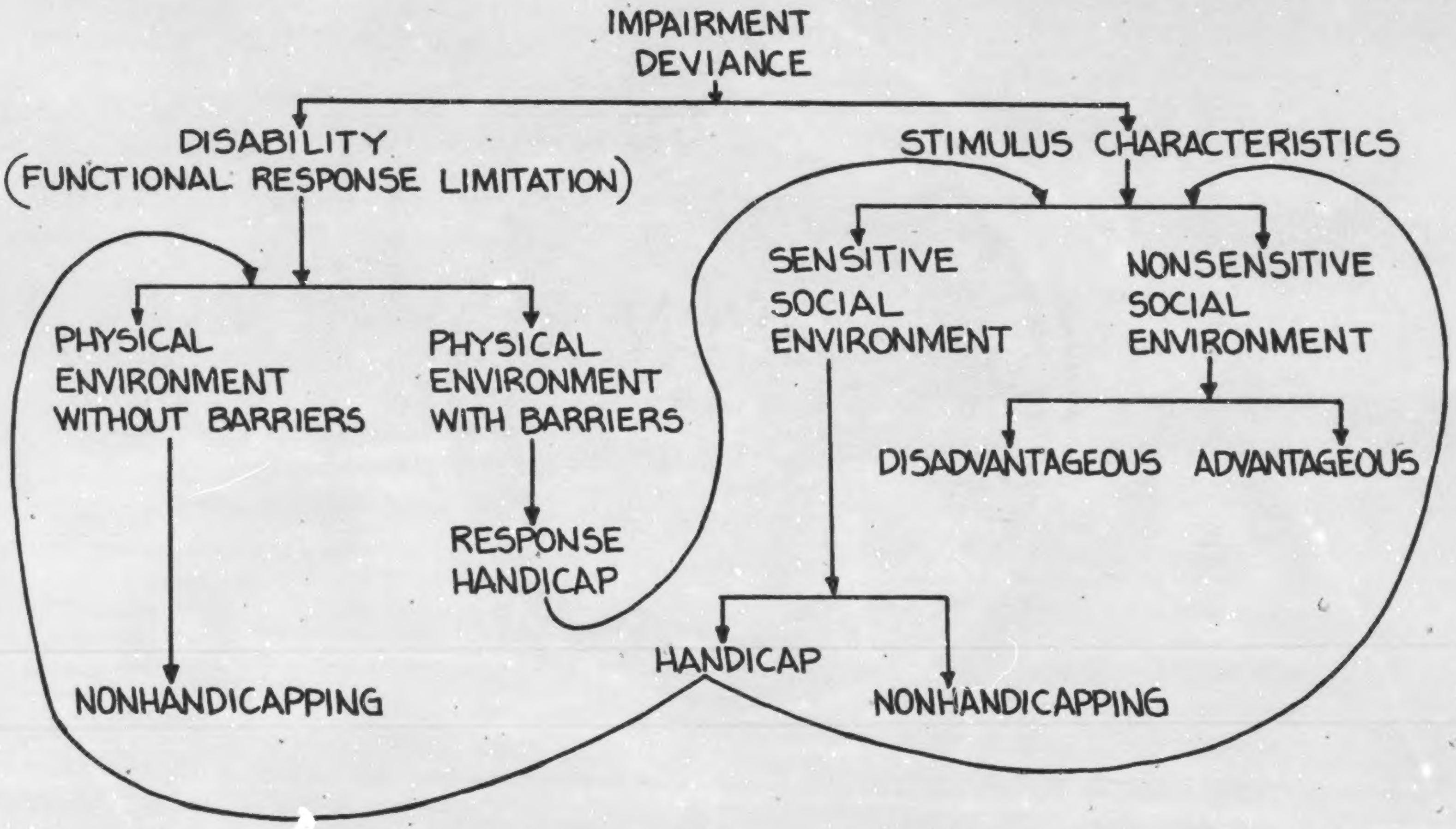

IMPAIRMENT
DEVIANCE
DISABILITY
(FUNCTIONAL RESPONSE LIMITATION)
STIMULUS CHARACTERISTICS
PHYSICAL ENVIRONMENT WITHOUT BARRIERS
PHYSICAL ENVIRONMENT WITH BARRIERS
SENSITIVE SOCIAL ENVIRONMENT
NONSENSITIVE SOCIAL ENVIRONMENT
DISADVANTAGEOUS
ADVANTAGEOUS
RESPONSE HANDICAP
HANDICAP
NONHANDICAPPING
NONHANDICAPPING

Figure 3. Contextual Model of Handicapping Conditions

Response characteristics are functional limitations which result from the impairment. According to Susser and Watson, these are disabilities and include the inability to walk or the inability to see (blindness). A disability will constitute a handicap, i.e., a social limitation (Susser and Watson, 1971), only within certain physical environments and at certain developmental stages. For example, there is a sizeable segment of the population who are unable to walk, but for whom this functional limitation is not a handicap. These individuals are, of course, infants. The older child who is unable to walk will be handicapped in an environment where mobility is required. However, if that environment is modified so that mobility may be achieved with wheelchairs, then the child does not experience a response handicap. An alternative method of ameliorating the handicap is through the use of prostheses. If the child is fitted with an artificial limb and learns to walk, then the functional limitation has been modified to reduce both the disability itself and the response handicap.

However, the impairment still acts as a stimulus to others, i.e., it has stimulus characteristics. The social environment may or may not be sensitive to these characteristics. If the other individuals in the environment are not aware of the impairment, then the stimulus characteristics may not result in a handicap. In addition when the disability has been modified and the response limitation reduced, the stimulus characteristics may also be reduced. For example, the use of an artificial limb covered with clothing may mean that the individuals in the environment are not aware of the impairment. Thus, the result may be a nonsensitive social environment. However, this social environment may not always be advantageous. For example, a partially deaf person who has learned to lip read can carry on a conversation so that other individuals may not know that the person is partially deaf. However, if the other persons turn away, then the hearing-impaired person will lose the conversation. Far more serious consequences may result when the parent of an impaired child is not aware of the impairment or denies its existence. The parent may then not provide desirable experiences (e.g., medical treatment or education intervention) to keep the child's development from progressively deteriorating.

When the individuals in the social environment are sensitive to the stimulus characteristics of the impairment, they may respond in an advantageous or disadvantageous way. Advantageous ways of responding include providing appropriate developmental stimulation for the child or employment opportunities for the adult. The result of this sensitive environment is nonhandicapping because there is no limitation of social roles. However, some individuals in a sensitive social environment usually respond in a disadvantageous way, at least at one level. The result is a handicap. At the first level of analysis this is a socially-induced handicap. This handicap may occur without a real impairment; the simple perception of an impairment and the social reaction to it are enough to create this type of handicap.

The circular function emphasis of the contextual model is shown in Figure 3 by means of feedback loops, although not all possible circular functions are illustrated. For example, the response handicap of not responding to visual stimuli acts as a stimulus. When blind children do not respond to their mothers' smiling, the result may be feelings of incompetence in the mothers. The mothers may thus be less inclined to interact with the children. In this way maternal feelings provide feedback to the child, and the result may be poor development.

The contextual model when applied to the development of handicapped children suggests two ideas for research. First, the stimulus characteristics and the social environment should be investigated as well as functional limitations. However, in the past functional limitations have been the primary focus of inquiry in the area of rehabilitation and the development of exceptional children. In part this is the result of the predominance of medical personnel and approaches in these fields (Richardson, 1970). Second, in order to understand the development of handicapped children we must examine the influences on their functioning at a variety of levels and examine the interdependence of these levels. The model of this research also shows a way of understanding the circular effect of the child's deviance. By looking at the social environment we can examine the development of the handicapped child somewhat apart from the child's response limitation.

The purpose of this research was to more closely examine a key element in the social environment of the handicapped child, the mother. The first question to be answered is, "Is the mother sensitive to the stimulus characteristics of the child?" A sensitive mother sees her baby as different from other infants. This question may be particularly important for the at-risk child. If the mother does not see this child as different, i.e., is nonsensitive to the stimulus characteristics, she may not provide desirable experiences to keep the at-risk child from becomming handicapped. If the mother is sensitive, the way she responds is the key to the second question, "Is the social environment advantageous or disadvantageous?" If the mother of the at-risk child provides appropriate interventions, then the social environment is probably advantageous. However, the mother might instead respond to the at-risk baby with a pattern of "overprotecting." The environment would then be disadvantageous and the baby might then suffer a socially-induced handicap.

The assumptions of the contextual paradigm and the applications outlined above show that parenthood is a potential source of developmental change for adults. In addition, the interdependence of levels implies that parental changes may ultimately affect the child. Thus, the goal of studying the development of the mother is to better understand the development of both parent and child.

Empirical Background

This study was designed to examine parental development within a life-span context and to compare parental development in mothers of handicapped and nonhandicapped children. Just as the model for this research is multidisciplinary, the empirical research related to these issues also comes from a variety of disciplines. Special educators and psychiatrists have documented the effects of the presence of a handicapped child on the parents and on the family. Sociologists have also discussed the social mileus of parenthood and handicaps and the resulting implications for interventions. In family sociology research on the transition to parenthood has explored the outcome of marital satisfaction for two decades. Finally, developmental psychologists have been exploring parent-child interaction, how children differentially affect adults, and the notion of development during the adult years. The literature presented here was selected to examine the validity of the contextual model. Thus, within each area, information about the assumptions of different levels of analysis and the influence of one event on subsequent functioning were used as criteria for inclusion in this review. Those studies directly contributing to the objectives or methodology of this project were examined in greater detail.

Adjustment to Having a Handicapped Child

Intuitively, one would expect that raising a handicapped child presents a greater challenge to parents and families and that such parents and families would be different from those who have a non-handicapped child. Research with both parents and families has shown such intuitions to be correct.

Prenatal Expectations. In order to understand the adjustment of parents to the presence of a handicapped child, one must first realize that the expectations concerning the child preceed birth and even preceed pregnancy. Veevers (1973) suggested that parenthood has social meanings as defined by the cultural-historical mileu of the time. He outlined six meanings that parenthood carries in todays western society: morality or a religious obligation, responsibility or a civic obligation, naturalness or instinct, sexual identity and competence, the goal of marriage, and normalcy or good mental health. Veevers also examined the implications of nonparenthood such as immorality and irresponsibility. Some of these meanings also have implications for the development of parents with a handicapped child. For example, having a handicapped child may be considered unnatural or associated with emotional maladjustment.

Ryckman and Henderson (1965) listed other possible meanings of a child for parents: an extension of the self, a source of vicarious satisfaction, deriving some measure of immortality, a personalized love object, self-worth in meeting the dependency needs of the child, and negative feelings about demands of child-rearing. The authors suggest that the first five meanings demand that parents of a retarded child either change the meaning of the child for themselves or develop defense mechanisms. In addition community pressures can determine the relative importance of any of the meanings.

Flapen (1969) suggested 13 perspectives from which to analyze child bearing motivations prior to the birth of the first child. Some of these are similar to the meanings of parenthood and included social expectations and personal identity, pressure from parents or from peers who are having children, and anticipations about pregnancy or childbirth. Three of these motivations would be especially disruptive to parent-child interaction if the child is handicapped. These are identification with the fantasized child, the expected relationship with the child, and fantasies about the newborn. If the parents had such motivations, then the birth of a handicapped child would require the development of coping mechanisms, such as considerable reorganization of the parent's expectations.

These speculations about the meaning of parenthood suggest that parents do not expect a child who is impaired. Obviously, few parents, if any, would choose to have a disabled child. The implications of parenthood and the expectations for a healthy baby also occur on the individual and biological levels. At the individual level, the pregnant woman is preparing herself psychologically for the birth of her child. Thus, Davids (1968; Davids and Holden, 1970) suggested that knowledge about mother prior to interaction with the child is necessary in order to understand the impact of the child on the mother.

At the biological level there is a wealth of information which shows the effect of various toxins during pregnancy. Well-known examples are the ingestion of the drug thalidomide and maternal infection with rubella during the early stages of pregnancy. Other drugs, including nicotine and alcohol, and infections can also affect the unborn baby. Less well-documented are the interactions between the psychological functioning of the mother and the biological and psychological functioning of the baby. Extreme stress in the mother during pregnancy can lead to the development of colic in the baby (Mussen, Conger, and Kagan, 1974). Cohen (1966) suggested that stress during pregnancy may also be related to the mother's postnatal ability to adapt to the infant by correctly understanding the meanings of the child's states.

In summary, the expectations preceeding and during pregnancy from the total social environment, individual, familiar and sociocultural, are for a healthy, intact baby. However, the mother's biological and psychological functioning during pregnancy may put the child at risk. If the child is subsequently impaired, the mother is then at great risk for self-blame and guilt.

Parental Adjustment After the Birth. Since the social environment expects a healthy infant, the birth of an impaired child requires the adjustment of the individuals involved. On the sociocultural level the social environment of the family with a handicapped or at-risk child is different from that of the family with a healthy child. For example, the rituals surrounding the birth are upset (Battle, 1974). Religious services may be cancelled. The network of family and friends may stay away because of uncertainty or embarassment. As Richardson (1969) pointed out, there are no well-established guidelines of behavior for the family or friends of the newborn disabled child. Medical personnel are often unsure how to react as well.

On the individual and dyadic levels, Klaus and Kennell (1976) studied the process of attachment during the neonatal period and examined the special cases of the birth of both the premature child and the child with a congenital malformation. For the mother of the premature infant, the separation from her baby puts her attachment at risk. One predictor of the subsequent outcome was the mother's level of anxiety; those with higher anxieties had a more successful adjustment (Klaus and Kennell, 1976; Mason, 1963). Cramer (cited in Klaus and Kennell, 1976) looked at the subjective experience of thirteen mothers of premature infants who weighed less than 2500 grams and received intensive care services for approximately two weeks. Using an interview technique, he found that these mothers had self-esteem problems, a sense of guilt, and problems with the separation which could lead to rejection.

Based on their clinical experience, Solnit and Stark (1961) characterized the reaction of parents to the birth of a defective child as consisting of several key elements. The first is that the infants do not match the expectations of the parents, so the parents must mourn the loss of the perfect infant before relating to the real infant. The parents will experience guilt and anger, some of which is directed toward the professionals with whom the parents have contact. The mother's mourning can be interrupted by caring for the handicapped infant, and this can be emotionally and physically exhausting. Klaus and Kennell (1976) enlarged the ideas of Solnit and Stark and outlined a sequence of five stages through which most parents of children with congenital malformations pass. These are: (a) shock, (b) denial or disbelief, (c) sadness, anger, or anxiety, (d) equilibrium, and (e) reorganization. The timing of this sequence varies with the parent, but the ultimate result can be a new sense of confidence (Daniels and Berg, 1968) and a positive self-image (Voysey, 1972). However, the parents must still deal with what Olshansky (1962) termed "chronic sorrow," the balance between mourning and acceptance.

In studies on the phychological adjustment of parents beyond the neonatal period, researchers have documented the greater anxiety and personality differences of parents of handicapped children in comparison to parents of nonhandicapped children. McMichael (1972) found that parents of physically handicapped children in London experienced anxiety about their child and themselves. The anxiety over their children was related to the severity of the disability, the prognosis, the child's future, and the ultimate care of the child, i.e., whether or not to institutionalize the child. Their personal anxieties concerned future pregnancies, marital disharmonies, and their health (both physical and mental). When there was an element of rejection in the parent-child relationship, the adjustment of the child was poor. McMichael concluded that realistic acceptance of the handicap by both parents was the key to the successful adjustment of both parents and child.

Both Barsch (1968) and Hewett (1970) criticized these negative descriptions of parents of handicapped children. Barsch (1968) studied the child-rearing procedures of 275 parents with handicapped children. Although he did not specifically study the dynamics of parental personalities, Barsch (1968) concluded that,

> The general tendency to characterize parents of handicapped children as guilt-ridden, anxiety-laden, overprotective, and rejecting beings is unfortunate. While it is true that such cases exist, the majority of the parents are unduly stigmatized by this generalization. (p. 342)

Hewett (1970) suggested that the finding of undesirable parental attitudes is exaggerated because of a sampling bias. Many research projects and most case studies have dealt with patients sampled from clinical populations unrepresentative of parents of handicapped children. A further problem of research design is the result of unclear definitions.

> When, for example, parents are referred to as feeling guilty about their handicapped child, it is often unclear whether the person writing means that they feel guilty because they have produced a handicapped child; because they cannot feel the same way about him as they would if he were not handicapped; because they are not doing enough for him; because they are doing too much for him; because they want to send him away from home; because they want to keep him at home, or because they are neglecting their other children - or all of these at once (Hewett, 1970, p. 77).

Dynamics of Parental Adjustment. Although Barsch and Hewett did not research the dynamics of parental adjustment, other researchers have. Erickson (1968; 1969) studied the personalities of parents of retarded and emotionally disturbed children. Using the Minnesota Multiphasic Personality Inventory, the majority of the individual profiles were considered normal. However, the mean profile showed problems in impulse control with greater-than-average anxiety, depression, and psychosomatic symptoms. Goodstein (1960) also used the MMPI to examine differences between parents of cleft-palate and normal children. Parents of children with cleft palates had higher overt defensive attitudes and greater anxiety. Although these differences were statistically significant, they were very small, and Goodstein considered them unimportant. There were also differences in the factors of psychopathology and schizoprenia, but these were probably reflections of the different socioeconomic status of the two groups.

In a study of maternal personality variables, Cummings, Bayley, and Rie (1966) found support for the clinical observation that having a child with a deficit is a psychologically stressful experience. Personality variables of 240 mothers of mentally retarded, chronically ill, neurotic, and control (no diagnosed deficiencies) children were assessed using the Edwards Personal Preference Schedule. The variables of concern were self-esteem, dysphoric affect (depression), interpersonal satisfaction, and child-rearing attitudes. In general, the mothers of handicapped children showed greater dysphoric affect, less self-esteem, and less interpersonal satisfaction than control mothers. (There were no significant differences in child-rearing attitudes.) The mothers of the neurotic children were the most deviant in comparison to the controls, and the mothers of chronically ill children were the least deviant.

One of the theoretical rationales for the Cummings et al. (1966) research was to study the personality development during parenthood. Similarly, Erickson (1968; 1969) and Goodstein (1960) studied parental personality, so these studies have implications for the research presented here. Although Cummings et al. were concerned with personality, they examined only a few variables which are clusters of personality traits rather than examining the actual source traits or motivations. More importantly, none of the studies assessed parental personality prior to the child's deficiency or examined the changes in personality across time. As Cummings et al., point out, "our cross-sectional research design does not offer any immediate contribution to the understanding of these essentially developmental phenomena, which require longitudinal designs for their investigations" (p. 597).

From a psychoanalytic perspective, clinicians have described the atypical behavior of some mothers of handicapped children. Forrer (1959) presented a case study in which the mother's fanatical deviation to her mentally retarded child resulted in neglect of her other two children. Gardner (1969) more closely examined the psychodynamics of the guilt reaction of parents of handicapped children and suggested that at least two processes might be at work in different people. The classical, Freudian explanation is that unconscious hostility toward the child produces guilt, while the alternative explanation is that guilt represents the parent's attempt to control the uncontrollable. Hosack (1968) showed that mothers of infants with abnormalities used coping mechanisms more consistently than mothers of normal infants who used defense mechanisms.

Kennedy (1970) studied the grief and mourning process in 22 mothers of defective infants. Within a time limit of 4 to 8 weeks following birth, mothers in this study underwent a three-stage process of protest, despair, and cathexis. The author suggested that presence of the infant in the mother's care interrupted the grief process, and thus removal of the infant for the period of grief might be implied. No indication was given of the possible effect of such separation on the child or on the mother's subsequent attachment to the child. Similarly, D'Arcy (1968) found that mothers of anencephalic infants who died showed a more intense mourning reaction than mothers whose congenitally impaired babies lived. However, these mothers (whose babies were still present) took longer to recover from their grief reaction.

Greenberg (1979) examined the effect of the birth of an infant with a birth defect on the self-esteem of five sets of parents. She found support for her hypothesis that this event was experienced as a narcissistic injury that affected self-esteem and interferred with parenting process. Factors which affected the parents' self-esteem and parenting were unfulfilled aspirations, such as the inability to breast feed due to the child's cleft lip and palate, defects that interfered with eye contact and smiling, and uncertain medical outcomes. Sociocultural factors such as the economic hardship and the employment of the mothers were also identified. Based on her study, Greenberg suggested that parents of children with birth defects are at risk for their self-esteem.

Parenting. Other research has examined the caregiving behaviors of mothers of handicapped children. Prechtl (1963) found that mothers of hyperkinetic or hypokinetic babies (those with minimal brain dysfunction) were anxious about whether or not they treated their babies correctly because they assumed that the source of the problem was not the baby, but themselves. There appeared to be a relationship between the baby's not meeting the mother's expectations and the mother's overprotective or rejecting attitude and behavior. Since the study did not look at the mother before childbirth, the influence of the mother's personality or health, the delivery (difficult or normal), and the baby's abnormal behavior cannot be assessed nor can the direction of effects. However, it is clear that the mother's overprotection or rejection and the baby's behavior were related.

Rose (1961; Rose, Boggs, Alderstein, Trigos, Rigg and Crowther, 1960) explored the association between "mothering breakdown" and physical abnormalities in the infant. When 90 mothers of children with Rh incompatibility were studied, Rose et al. (1960) found that these mothers saw their children as less viable both at birth and as the children grew. Reassurances from physicians about the health of the children did not affect this attitude. While these mothers had reared other children successfully, their inaccurate perception of the meaning of state changes in these infants was an impediment to the fostering of healthy development. In a follow-up, Rose (1961) suggested that the original maternal anxiety about the viability of the child with physical abnormalities was again produced at each new maturational period. This new period brought rapid change and thus insecurity regarding the earlier assurances of the child's good health. These mothers were unable to respond appropriately to changes or to develop close ties with the child. However, if substitute caretakers were available, these children did not develop physical disorganization.

Green and Solnit (1964) also examined inappropriate caregiving. They hypothesized that children whose parents expect (or expected) them to die (e.g., because they had a serious illness from which they were not expected to recover) would often react with a psychosocial distrubance. In examining the clinical records of 25 such children ages 17 months to 14 years, they discovered a pattern of parent behavior including pathological separation difficulties, inability to set disciplinary limits, overprotection, and overconcern with child's bodily functions; they label this a "vulnerable child syndrome." Since not all parents of children who recover from critical illnesses develop this syndrome, Green and Solnit suggest that there are variables in the family history which might predict this. These variables might include that the vulnerable child is the first born after a miscarriage or a period of infertility, that the parents are unable to have additional children, or that there is unresolved grief in the family due to another death.

In a review chapter, Richardson (1969) concluded that the parents of the physically disabled child focus on motor skills with a resultant loss of concern for cognitive or social development. He suggested that "for issues involving the very young child who is handicapped, research may more profitable be focused on the adults responsible for him" (p. 1062).

Mercer (1974a) examined the behaviors of five mothers of handicapped children during the period from birth to 3 months of age. The initial response of the mother (birth to 8 days) consisted of increasing assessment behaviors. Contact behaviors decreased from 8 days to 1 month and then increased during the 2nd and 3rd months. In contrast, caregiving behaviors increased from 8 days to 1 month and then decreased. In an earlier study (Mercer, 1974b), mothers responded to the birth of an infant with a defect with cognitive and social behaviors to reorganize their lives and expectations; only one-fifth of their responses were emotional.

Effect on Family Integration. Family sociology has also increased our understanding of the effect of the handicapped child. After studying 240 families with one mentally retarded child, Farber (1959, 1960) suggested that if the family defined the situation (with a handicapped child) as no different from the expected situation (with a normal child) and if the family believed that family routines would meet the situation, then there was no crisis in having a severely mentally retarded child. This suggests that a handicap must first be perceived and then assessed as a problem for it to affect the parent's behavior and family functioning. When crises did occur they were of two types. The tragic crisis was like bereavement in that life plans were frustrated; there was a high initial impact. In a role organization crisis, there was an inability to cope with the child over a long period of time. The presence of a mentally retarded child usually produced a role organization crisis, adversely affected marital integration, and was associated with high sibling role tension.

In a more recent study, McAllister, Butler, and Lei (1973) compared the social interaction of 281 families with a retarded child to 784 families without a retarded child. They found systematic differences in interaction among the families that were related to the degree of retardation and subsequent visibility of the handicaps. More severe retardation was associated with less extrafamilial interaction and distortions in intrafamilial interactions. Carver and Carver (1972) also found patterns of decreased interaction in social relationships.

Grossman (1972) interviewed college-age students who had a retarded sibling and found that severity of retardation was not significant in affecting the siblings' response to retardation. When the handicapped sibling was a brother, the siblings volunteered more information about the brother to friends and knew more about mental retardation (assessed by an information test). However, parents were described as more accepting of a female retarded child. The students were more embarrassed by a retarded sibling of the same sex. In general when compared to normal brothers, normal sisters were more anxious, more willing to talk about the handicap and less embarrassed about being seen with the retarded sibling.

Howard (1978) summarized most families' adjustment to having a handicapped child. The first reactions are depression and denial, interspersed with anger. There is great anxiety about the future, the child's disability and role, and the family's social adjustment. The healing process, when it begins, must include a partial acceptance of the problem. However, "it seems unrealistic to expect parents to fully accept their situation and to have the same confidence in parenting their handicapped child as they do in parenting their normal children" (p. 279).

Finally, the effect of a handicapped child on the family is also mediated by the sociocultural mileu. When economic resources and community support are scarce, greater stress is placed on the family (Farber, 1959; Gorham et al., 1975; McMichael, 1972; Tizard and Grad, 1961).

Development of Parents

Family Development. In two decades of research, family sociologists have documented some of the changes that occur when a couple becomes a family. In an early study (LeMasters, 1957) 38 out of the 46 families studied (83%) reported extensive or severe crises in adjusting to the first child. LeMasters suggested that since there is very little effective preparation for parenthood, crisis is the logical result. In effect parenthood is a romantic concept with little basis in reality until the first child is born. In a series of later studies, Hobbs (1965, 1968; Hobbs and Cole, 1976) failed to replicate the finding of extensive or severe crisis and suggested that the difficulty score may vary with the instrument. LeMasters, in using an interview, may have emphasized the difficulties, while Hobbs' use of a checklist may have diminished them. Still Hobbs did document the problems of parenthood. In these studies mothers had more problems adjusting to parenthood than fathers. Their problems include disruption of routine, tiredness and fatigue, increased money problems, and emotional upset. Fathers also had problems with the interruption of habits and money problems.

Russell (1974) examined the gratifications as well as the problems in the transition to parenthood, and found that the gratifications were personal rather than being associated with the marital relationship. The wife's problems were also individual and dealth with emotional and physical difficulties. The husbands showed a broader range of problems, including suggestions from in-laws, increased money problems, and an additional amount of work. Successful adaptation was related to the couple's pattern of communication, their commitment to parenthood, and good maternal health with a calm baby. Preparation for fatherhood was correlated with the gratification score.

Hill and Aldous (1969) documented the lack of preparation for parenthood. Rossi (1968) suggested that this lack is one of the unique features of the parental role. The other unique features are: (a) there are cultural pressures to assume the role; (b) the inception of the role may be unwanted and it is not easily terminated; and (c) the role is irrevocable--once a parent, always a parent. Rossi went on to suggest that the parental role is high in instrumental or task components. This conflicts with the traditional female marital role which is expressive and high in affect, and this conflict may be one source of the mother's greater difficulty in adjusting to parenthood.

In more recent sutdies, the finding that marital adjustment is adversely affected by the birth of the first child has not been replicated (Rollins and Galligan, 1978; Spanier, Sauer, and Larzelere, 1977). Instead family sociologists have considered the birth of the first child as one step in the family life cycle. This approach, called family development, considers the pattern of family life as a function of individual life cycles (Rodgers, 1973). Each new step in the family life cycle requires adjustments, but is not necessarily a "crisis."

Individual Development. In addition to considering the pattern of family development, parenthood can also be considered an individual developmental phenomenon. Although the changes during adulthood (including those that occur with parenthood) have been documented, the idea that development continues into adulthood is a controversial subject for psychologists (cf. Baltes and Schaie, 1976; Neugarten, 1966). This controversy may, in part, be the result of differing definitions of development (as discussed above). However, using the contextual model suggested above and the idea of intraindividual changes as development, research has shown that parenthood can be a source of interindividual differences in those changes.

Theoretically, Erikson (1963) outlined the task for adulthood as generativity vs. stagnation. Although not exclusively concerned with biological parenthood, the goal of the period is "establishing and guiding the next generation" (p. 267). Welds (1976) stated that nonparents have been stereotyped as atypical and unable to achieve generativity. However, her research showed that successful completion of this task can be achieved by professional women who have achieved success in their careers. There is still a lack of information on the success in task attainment of parents whose child is atypical and even on the normative development of parents.

Likewise, in Benedek's theory (1959) parenthood is a source of structural change, i.e., a source of development. Parents are capable of structural change because their experiences with the child evoke memories from their own childhood. Thus, there is the opportunity for the parent to re-work these memories and by resolution of the conflict, achieve a new level of integration. Benedek thus characterized the nature of the development in parenthood as consisting of the same processes as development during infancy or adolescence.

From a psychoanalytic perspective, Bibring, Dwyer, Huntington, and Valenstein (1961) also saw parenthood, including pregnancy, as a source of development. After studying 15 primiparous mothers, they found that pregnancy was a developmental crisis because of the interdependence of psychological and physiological changes. They defined crisis as disequilibria that lead to points of no return. However, pregnancy is just the first crisis. The essential maturational changes come after delivery and, in accordance with Benekek's (1959) theory, with each new crisis of childhood.

Cohler, Weiss, and Grunebaum (1970) conceived of motherhood as a series of developmental tasks, e.g., providing for the nurturant care of the infant, establishing a reciprocal relationship with the toddler. While the infant's developmental progress is the original source of a particular developmental task, the child's subsequent health and development are dependent upon the mother's successful completion of each developmental task. Thus, these tasks are unique in the life cycle since their successful completion is dependent not only on the mother's personality, but also on the individuality of the child's needs. In research consistent with this concept, Cohler and his colleagues (Cohler, Weiss and Grunebaum, 1970; Cohler, Grunebaum, Weiss, Hartman, and Gallant, 1976) have shown that mothers who had been hospitalized for psychiatric problems were less able to form reciprocal relationships than those who were not hospitalized. The hospitalized mothers were less able to change for the next developmental task and thus, less successful in parental development.

Parenthood may also affect the development of other roles. After examining descriptions of parenthood, Abrahams, Feldman, and Nash (1978) found that these descriptions assume traditional sex role allocation within the marital dyad. Using a cross-sectional design, they studied sex role self-concepts and attitudes in four life situations: cohabitation, marriage, the anticipation of a first child, and parenthood. The self-concepts and attitudes conformed to the behavioral descriptions of the roles, e.g., the parents had traditional sex roles. The researchers concluded that sex role requirements vary with life situations.

Other research has confirmed that while some psychological changes for parenthood occur during pregnancy, parental development is not completed with the birth of the first child. Attitudes, for example, continue to change (Davids, 1968; Davids and Holden, 1970). Changes in caregiving behaviors (Fein, 1976) or developing the "skill" of parenting (Aldin, 1976a,b) might be considered the goal of parent education programs.

Finally, studies have shown the developmental nature of maternal attachment to infants. Robson and Moss (1970) have shown that maternal attachment will decrease if the crying and fussing of the baby does not decrease over time. Fortunately, in most cases as the baby grows older, these fussing behaviors do decrease, so maternal attachment is not impaired. Klaus and Kennell (1970, 1976) have examined many of the factors which influence or change maternal attachment, e.g., the mother's care by her own mother, relations with her husband, hospital practices, and the baby's individuality. One factor, separation versus contact with baby during the hospital stay, not only relates to maternal attachment, but also to maternal self-confidence and skill at caregiving behaviors (Seashore, Leifer, Barnett, and Leiderman, 1973).

Weinraub, Brooks and Lewis (1977) reconsidered the idea of attachment from the perspective of the social network rather than the individual level of functioning. Beginning with the propositions that man is social and that the social network has a variety of social objects, Weinraub et al. show how attachment will vary with the larger environment, with the child's behavior, and with the changes associated with the development of the child. Thus, handicapped children and their parents whose social network, behavior, and development may be atypical will probably show a different pattern of attachment.

The Direction of Effects and Individual Differences

For a number of years, psychology has examined the development of children under a unidirectional model which suggested that parents directly affected their children but which failed to examine the effects of children on parents. In a series of articles, Bell (1968, 1971, 1974) has explored the implications arising from the unidirectional model of parental effects. He suggested that the direction of effects may be determined by the social climate of the times. When psychologists rejected the notion of innate ideas in children, they embraced the unidirectional model of parental effects. However, as

Bell stated (1968) there are a number of congenital factors which will differentially influence the parents' caregiving behaviors. These are: (a) impaired sensory motor development, (b) behavior disorders involving hyperactivity, (c) some person orientation, and (d) some assertiveness. Bell (1971) cited a number of studies which showed that the infant can control the mother by initiating interactions. Other studies have documented other effects of children on parents. For example, Yarrow and Goodwin (1965) demonstrated that a mother changes in response to the characteristics of her adopted child. These data and others led Bell to conclude that evidence was available to document the fact that the child affects the adult.

Data from a more recent study support a similar conclusion. After a longitudinal study of 36 mothers and their first-born children, Clarke-Stewart (1973) found high correlations between maternal stimulation variables at one time and the child's intellectual development at a later time. However, in social interaction, "the influence of the child's behavior on his mother's activities was strongly felt" (p. 93). Thus, the direction of effects was not solely from mother to child but also from child to mother.

Clarke-Stewart's research is pertinent to the research presented here because she examined maternal personality, knowledge about child development and child rearing. After a factor analysis, Cattell's factors of ego strength (C) and self control (Q_3) defined a factor labelled control, while Cattell's factors of experimentingness (Q_1) and imaginativeness (M), knowledge of child development and the mother's score on the Peabody Picture Vocabulary Test defined a factor called intellectuality. The maternal factor of intellectuality significantly correlated with a factor of infant competence while the factor of control did not correlate significantly with any infant factor. Clarke-Stewart's findings are interesting in part because she examined the mother as a person apart from her caregiving behaviors. However, this aspect of her study was not longitudinal; the personality and knowledge scales were only administered at the final session. Thus, changes in these maternal variables were not considered.

In a review paper, Goldberg (1977) outlined how the infant's behaviors facilitate adult-infant interactions. The model which she proposed focuses upon the contingencies which each member of the dyad provides for the other. That is, the contingency of experiencing an infant's response is critical in developing an "expectation of effectiveness" in the mother. Although parental histories determine their initial expectation of being effective, this expectation will be influenced by the parent's experiences with the infant. Thus the infant with handicaps may not respond to the mother and will thus contribute to her feeling of not being effective. Children who have a unique style of response may simply force their parents into learning how to better understand that response in order to "feel effective."

Since every child is unique (Lerner, 1978), these studies suggest that every child will have a different effect on the parents. In a series of studies, Thomas, Chess, Birch, Hertzig, and Korn (1963; Thomas, Chess and Birch, 1970) have shown this uniqueness of children and its effect. First, they identified nine apparently stable, individual characteristics of behavior which are present in the first months of life. These included such things as activity level, rhythmicity, adaptability and intensity of mood; the child's unique pattern of these characteristics was called temperament. In their early work Thomas et al. (1963) suggested that the children's primary reaction and patterns may influence not only their own behavior, but also their parents' immediate and persistent reaction toward them. In their later work, Thomas, Chess and Birch (1970) identified three clusters of temperant patterns: the easy child, the difficult child, and the slow to warm-up child. In following these children into childhood the researchers found a disproportionate number of behavior problems among the difficult group. They suggested that this is because the socialization demands upon these children often conflicted with their temperament and produced stress. Thomas et al. (1970) suggested that parental knowledge of the child's temperament could help to prevent such conflicts and the subsequent behavior problems. From this research Carey (1972) developed a scale to assess early temperament and advised physicians to use it to prevent breakdowns in the relationship between parent and child.

If we consider handicaps to be individual differences, then the findings of Thomas et al., coupled with the studies of children with minor deviations or health threats (Green and Solnit, 1964; Prechtl, 1963; Rose et al., 1960), suggest that handicaps are a source of differential development for the parents. This is consistent with the model for this research which suggests that handicapped children may be key determinants of the social environment which they experienced.

However, the other studies reviewed above suggest that the experience of the parents of handicapped children may not be completely unique. Thus, a comparison of mothers of handicapped children and nonhandicapped children can reveal where, along a handicapped versus nonhandicapped dimension, parental development is in common and where it is unique.

Summary and Objectives

The research reviewed in the previous section supports two major assumptions about parenthood. First, parenthood is a potential source of development. At the individual level this means that parents will show intraindividual changes. In order to study these changes a longitudinal design is necessary, but most previous research has assessed parents at only one point in time (Clarke-Stewart, 1973; Cummings et al., 1966; Erickson, 1968; Goodstein, 1960). The research suggests that intraindividual changes might be found in self-esteem, motivation, and aspects of anticipatory socialization such as knowledge, beliefs, and expectations (Benedek, 1959; Bibring et al., 1961; Cohler et al., 1970; Hill and Aldous, 1969; Hultsch and Plemons, in press; Le Masters, 1957; Rossi, 1968).

The second assumption supported by the research is that the experience of having a handicapped child may be a source of interdividual differences in the intraindividual changes brought by parenthood. The most replicated finding is that parents of handicapped children are more anxious and show greater guilt than parents of normal children (Gardner, 1969; Hewett, 1970; Howard, 1978; Klaus and Kennell, 1976; McMichael, 1972; Solnit and Stark, 1961). Since the anticipatory socialization for parenthood is for a healthy child, the parents of handicapped children must reorganize their expectations, motivations, and beliefs, and possibly obtain new knowledge (McMichael, 1972; Ryckman and Henderson, 1965; Tizard and Grad, 1961).

Objectives

The assumptions supported above imply that research on parental development should be longitudinal and that a comparison of parents of handicapped and nonhandicapped children can reveal one source of interindividual differences. The changes and/or differences suggested by previous nonlongitudinal research were used to develop three objectives for this research.

1. Mothers of handicapped children are described as anxious, guilty, and tense. Cattell (1973) states that anxiety and its associated components, ego strength, guilt-proneness, self-sentiment, and tension are affected by life events, such as marriage or the loss of a job. This research examined time-related changes in these personality factors and differences between mothers of handicapped and nonhandicapped infants during the transition to parenthood.

2. A role transition, such as that from nonparents to parent, is often associated with new goals, interests, or motivations (Bell and Vogel, 1968). A second objective of this research was to examine changes and differences in motivations as a function of motherhood and the health of the infant.

3. The idea of anticipatory socialization for parenthood suggests that new mothers already have knowledge, beliefs, and expectations about their role and their children. This research explored whether or not the reality of a unique child (including the presence of handicaps) caused the mothers to resocialize themselves for the parent role.

CHAPTER III

PROCEDURES

This project consisted of two studies. The first study was designed to yield information about changes in first-time mothers during late pregnancy and the early months of a child's life. Thus, the mothers were first assessed prenatally, and follow-up testing was done after the birth of the child. Because of the difficulties of predicting before birth which children will have a handicap or be at risk, the number of mothers of at-risk children in the first study was too small to provide a generalizable idea of the parents of handicapped children. Therefore, a second study was included to provide a larger sample of mothers and a control for repeated testing. First-time mothers in the second study began participation after the birth of their child.

Sample - Study One

The subjects for this study were drawn from the population of pregnant women visiting the prenatal clinic at Temple University Hospital. The hospital is located in a low-income, urban area, and most of the clinic patients received assistance to finance their medical care. These women had a greater than average chance of having a handicapped or at-risk child due to maternal age, health, or education. For the year of 1977-1978, approximately one out of seven women in this population had a handicapped or at-risk child. The use of this population thus maximized the potential number of mothers of at-risk children. Every first-time mother visiting the clinic was asked to participate in the study. This group included primiparous women and those women who previously had given birth to a child who had not survived more than 24 hours. One hundred forty women were asked to participate in the study. Four women declined to participate, and incomplete measures were obtained from 21. Completed measures were thus obtained from 115 women in this first phase of the study.

Sample for Follow-Up Testing

After the birth of their children, the mothers of those children who were handicapped or at-risk were asked to participate in follow-up sessions. Fourteen women of the original 115 were known to have such children.[1] Of these women two were not followed at all due to the critical status of their child's health. Six mothers could not be located for all testing sessions, so six mothers of at-risk children completed all four sessions. Twenty mothers with normal, healthy children also participated in follow-up testing. Fourteen of these mothers were matched with the mothers of at-risk children on the variables of marital status, age, education, and where possible, sex of the baby. The characteristics of each group are presented in Table 1. For the age variable a dependent t-test for the difference between the means was not significant (t (13) = 1.82, $p > .05$).

TABLE 1.

Characteristics of Samples for Study 1

	Total Sample	Follow-Ups Mothers of At-Risk Children	Follow-Ups Mothers of Normal Children
Number	115	14	14
Marital Status			
married	10% (11/115)	7% (1/14)	7% (1/14)
single	90% (104/115)	93% (12/14)	93% (13/14)
Age (in years)			
mean	19.4	20.1	19.2
standard dev.	3.57	3.59	1.94
Education (in years)			
mean	11.45	11.64	11.64
standard dev.	1.50	1.34	1.00
Sex of Child			
boy		40% (6/15)[a]	21% (3/14)
girl		60% (9/15)	79% (11/14)

[a] One mother in this group had fraternal twins, a boy and a girl.

Measures - Study One

In keeping with the objectives of the study, five measures were selected to assess personality, motivation, and the anticipatory socialization variables of knowledge, beliefs, and expectations. (See Appendix A for copies of all measures.)

Personality

The approach to personality used in this study comes from the work of Cattell and may be characterized as quantitative and experimental rather than clinical (Cattell, 1965). The personality of the mothers was assessed using the Self-Analysis Form, also known as the IPAT Anxiety Scale (Cattell, 1976; Krug, Scheier, and Cattell, 1976). This test is similar to Cattell's other measures of personality, e.g., the 16 PF, in that it examines source traits (the primary factors) and the secondary factors derived from them. This is in contrast to multiphasic tests of personality which are designed to study surface traits, which are also known as syndromes (Cattell, Eber, and Tatsuoka, 1970). The 40 items on the Anxiety Scale represent the source traits of anxiety as determined by Cattell and his colleagues: tension (Q_4), guilt proneness (O), ego strength (C), trust (L), and self-control (Q_3). The total score on the Anxiety Scale provides an index of the second order factor of anxiety (Q_{II}). Estimates of test-retest reliability for the total score range between .93 (for a 1-week interval) and .86 (for a 2-week interval). Component scores may also be obtained from the scale, but their reliabilities are less than that of the total score and range from .41 to .66.

Motivation

Cattell's (1965) characterization of motivation was used in this research. He defines motivation in terms of dynamic traits, and these dynamic traits are differentiated into ergs (drives) and sentiments. Sentiments are influenced by the processes of schooling and acculturation, and Cattell sees them as "acquired dynamic structures" (Cattell, Horn, Sweeney, and Radcliffe, 1964, p. 22). The motivation of the mothers was assessed with the short form of the Motivation

Analysis Test (Cattell et al., 1964; LMAT, 1975). The LMAT uses two objective devices, use of resources and paired words, to assess motivation. In this form, test responses are less susceptible to distortion than in questionnaires or checklists of interests. The test yields scores on five sentiments that were used in this research: career, sweetheart-spouse, home-parental, superego, and self. Dependability coefficients for the sentiments from the longer MAT range from .53 to .81; no estimates of reliability are available for the shorter form.

Anticipatory Socialization Measures

As seen by Brim (1966) and Hultsch and Plemons (in press), anticipatory socialization is preparation for a role that occurs before the assumption of the role. Anticipatory socialization includes knowledge relevant to the role, and expectations and beliefs about the role. No well-established measures of parental knowledge, beliefs, or expectations were available, so revisions were made to seemingly appropriate measures from other research. The reliability and validity of these measures were assessed using a pilot sample. The pilot sample consisted of 13 middle-class mothers of nonhandicapped children, ages 0 to 5 years, 16 low-income mothers from the prenatal clinic at Temple University Hospital, 13 mothers of handicapped children in infant stimulation programs in New Jersey, and 11 advanced students of child development. Reliability was assessed using measures of internal consistency, either coefficient alpha or K-R 20.

Parent Beliefs. Parent beliefs may be characterized as the theory or theories used by the parent to explain children's development and behavior. Parent beliefs were determined using a modification of the Teacher Belief Inventory (Verma, 1973). Items from the Verma scale which referred only to classroom practices were dropped, and references to teachers were changed to refer to parents. In this modification, 20 items tapped opinions concerning parental behavior and how children develop. This modification was administered to the mothers in the pilot sample (N = 42). Ten items showing low correlations with the other items were dropped, and ten items were kept after pilot testing. Five items indicated agreement with operant beliefs, and the other five items showed agreement with child development beliefs. On the basis of this scale, mothers received two scores, one for agreement with operant beliefs and one for agreement with developmental beliefs. The coefficient alpha for the pilot sample (N = 42) for the development beliefs was .60; for the operant beliefs it was .82. As a check for construct validity, the Pearson product moment correlation of the two scores was obtained, $r = -.18$. This slight negative correlation was consistent with the original scale of Verma, thus indicating some construct validity.

Knowledge. For the parental role, relevant knowledge would include information about normal and atypical child development. The Knowledge of Infant Development Scale (Duscewicz, 1973) assesses knowledge of concepts relating to infant development. Eight items about atypical development were added to the scale, and four items that dealt only with school situations were dropped. With these modifications, the scale was administered to the students and 32 mothers in the pilot sample. For this sample (N = 43) the scale had a K-R 20 reliability of .89.

Parental Expectations. Expectations for the parental role would include inferences about the abilities of the child. Jensen and Kogan (1962) devised a scale to assess parental estimates of the abilities and future achievements of their cerebral palsied children. Using this scale as a basis, a questionnaire of 30 items was developed to examine parental expectations about nonhandicapped children as well. Ten areas are covered by the scale: self-care, education, schooling, literacy, employment and income, social interaction, mental ability, physical ability, physical skills, and family management. In each domain, one item represented below-average expectations, one item represented average expectations, and one item represented above-average expectations. This scale was administered to the mothers of nonhandicapped children (both middle- and low-SES) and 12 mothers of handicapped children. The scale had a K-R 20 reliability of .92 for the total sample (N = 41). To check the construct validity of the scales, the scores of the mothers of handicapped children were compared to the middle-class mothers of nonhandicapped children. A one-tailed _t_-test for independent samples showed a significant difference between the means, _t_ (23) = 8.34, $p < .01$. The difference was in the expected direction since mothers of handicapped children had lower expectations than mothers of normal children.

Method - Study One

Table 2 presents the design of this study. The research project was explained to each first-time mother during a visit to the prenatal clinic late in the second trimester or early in the third trimester of pregnancy, and her participation was requested. (See Appendix B for explanation of study and informed consent form.) If the woman agreed to participate, each of the five measures was administered. This required approximately 1 hour of time. For most subjects, the measures were administered orally, while they read a copy of the scale. If the women asked, they were allowed to complete the measures on their own. If a woman did not want to complete all of the measures during this clinic visit, she was approached again during her next visit. The women were paid $10 for their participation in the first session.

TABLE 2.

Design of Study One

	Time	Measures Administered	Number of Mothers Tested
First Session	3rd trimester of pregnancy	Self Analysis Form LMAT Expectations Knowledge Beliefs	115
Second Session	2-3 days post-partum	Self Analysis Form LMAT Expectations	10 (Risk) 20 (Control)
Third Session	5-6 weeks post-partum	Self Analysis Form LMAT	8 (Risk) 9 (Control)
Fourth Session	10-12 weeks post-partum	Self Analysis Form LMAT Expectations Knowledge Beliefs	6 (Risk) 10 (Control)

Birth records were obtained for these first-time mothers. All mothers whose child had a birth defect or required more than 24 hours supervision in the intensive care nursery were classified as mothers of at-risk children. (See Appendix C for a complete listing of risks.) Ten of these mothers were available for follow-up testing in the maternity ward, 2 to 3 days postpartum. At this time, the Self Analysis Form, the LMAT, and the parental expectations scale were administered. All 20 mothers in the control group were also tested in the maternity ward.

In the first 3 months postpartum the mothers of at-risk children and control mothers were followed-up twice, once 5 to 6 weeks postpartum and again 3 months postpartum. Most of these sessions were conducted in the pediatric clinic. However, the questionnaires for some mothers were mailed, and some were administered by means of telephone. During the postpartum session at 6 weeks, the personality and motivation measures were administered. Eight mothers of at-risk children participated in this session, including two of the mothers who were unavailable in the maternity ward. Nine control mothers finished the session. During the last testing session, all five measures were administered. Six mothers of at-risk children and ten control mothers finished this session. In total, six matched pairs of mothers of at-risk and normal children completed all four testing sessions. Mothers were paid $10 for participation in each follow-up session.

Sample - Study Two

The purpose of the second study was to provide greater external validity for the project as a whole. In addition to having a small sample size, the first study tested mothers who were at-risk to have a risk child. These high risk mothers were a select group and, thus, did not provide a source of generalizable data on maternal development.

Fifty-one primiparous mothers of children under 4 months of age with diagnosed handicaps or who were at risk were located through two infant stimulation programs in New Jersey and through referrals from the neonatologists and cytogeneticists at St. Christopher's Hospital for Children, Raritan Valley Hospital, and St. Peter's Medical Center. As in the first study, children were considered at-risk if they required services in the intensive care nursery for longer than 24 hours. (See Appendix C for a complete list of handicaps and risk classifications.) Fifty-one first-time mothers with children under 4 months of age with no apparent problems were located through advertisements, childbirth education classes, and obstetricians. Nine of the mothers of at-risk children were lost from the sample after the first session because of (a) incomplete measures of the first testing session, (b) refusal to participate in follow-up sessions, or (c) inability to contact again.

The 42 mothers of at-risk or handicapped children who completed at least two testing sessions were matched with 42 mothers of normal children. The matching variables were marital status, mother's age, mother's education, child's age, and where possible, sex of the child.

The characteristics of the samples are shown in Table 3. The differences between the means of the matched pairs were compared using t-tests for dependent samples. The difference between the means for education of mothers of normal children and mothers of risk children means was significant (t (31) = 3.13, $p < .01$). This was not felt to be a crucial difference since it represented less than one year's difference in schooling and was at the college level. However, the measures were correlated with education as a precaution (see Chapter 4). No other t-tests yielded significant differences.

TABLE 3.

Characteristics of Follow-Up Samples for Study Two

	Mothers of Normal Children	Mothers of Handicapped Children	Mothers of At-Risk Children
Number	42	32	10
Marital Status			
married	93% (39/42)	94% (30/32)	90% (9/10)
single	7% (3/42)	6% (2/32)	10% (1/10)
Child's Age (in months)			
mean	1.95	1.63	2.40
standard	.91	.94	.97
Mother's Age (in years)			
mean	25.2	25.2	23.9
standard	4.21	4.78	6.30
Mother's Education (in years)			
mean	14.1	13.4	12.7
standard	2.10	2.42	2.06
Sex of Child			
boy	48% (20/42)	53% (17/32)	.60% (6/10)
girl	52% (22/42)	47% (15/32)	.40% (4/10)

Control for Repeated Testing

Although all mothers were experiencing the same repeated testing, a check on the effects of repeated testing was considered important if the data were to indicate normative changes in first-time mothers. Accordingly, 35 mothers from the same childbirth education classes served as the controls for repeated testing.

Measures - Study Two

The measures for this study were the same as those used in the first study. (See Appendix A for copies of the measures.)

Method - Study Two

Table 4 presents the design of this study. Mothers of handicapped or at-risk children were contacted by letter as soon as possible after birth. The letter briefly explained the study and was followed-up by a phone call (see Appendix B for letter). The study was explained to the control mothers in childhirth education during one of their classes. Those first-time mothers who expressed interest in the study were contacted by phone approximately 2 weeks after their delivery date. The other control mothers received the letter explaining the study, and a follow-up phone call was made. If the mother agreed to participate, the first testing session was scheduled in the mother's home. If a convenient time could not be arranged, or if the mother lived too far away, the first questionnaires were mailed. All five questionnaires were administered during this first testing session.

TABLE 4.

Design of Study Two

	Time	Measures Administered	Number of Mothers Tested
First Session	2-15 weeks postpartum	Self-Analysis Form	51 (Normal)
		LMAT	37 (Risk)
		Expectations	14 (Handicapped)
		Knowledge	
		Beliefs	
Second Session	1 month after first	Self Analysis Form	49 (Normal)
		LMAT	31 (Risk)
			10 (Handicapped)
Third Session	2 months after first	Self Analysis Form	50 (Normal)
		LMAT	28 (Risk)
		Expectations	8 (Handicapped)
		Knowledge	33 (Control for repeated testing)
		Beliefs	

The second testing session occurred one month after the first. At this time, the personality and motivation measures were again administered. The tests were administered orally over the telephone to the three mothers who requested this during the first testing session; the remainder of the tests were mailed. Forty-two matched pairs completed the second session.

Thirty-five matched pairs completed the third testing session, one month after the second. All five measures were again administered orally to three mothers and mailed to the remainder. All mothers were paid $3 for their participation in each session.

The controls for repeated testing were contacted by phone when their children were between 4 and 6 months of age. All five measures were mailed to those who agreed to participate. Completed questionnaires were received from 33 mothers.

CHAPTER IV

RESULTS

This chapter presents the results of the data analyses for both studies in this project. Results from study one are presented first followed by results from study two. The final section presents the analyses which compared the two studies.

Results - Study One

The data from the first study were analyzed for group differences, both initially and across time, for changes across time, and for the correlation between measures at different times. The first analyses compared the mothers who were followed to the mothers who were tested only prenatally to see if there were any group differences in the ten dependent variables: anxiety, the sentiments of career, home - parental, superego, self, and sweetheart - spouse, and the anticipatory socialization variables of knowledge of infant development, developmental beliefs, operant beliefs, and parental expectations. The means and standard deviations for the mothers of normal children who were not followed, for the mothers of at-risk children, and for the mothers of normal children who were followed are presented in Appendix D (see Table 17). Differences between the means in the dependent variables were examined with *t*-tests for independent samples (see Table 5). The Type I error rate for each set of two comparisons (for each dependent variable) was controlled at the .05 level by using the Bonferonni *t* statistic (per comparison error rate

TABLE 5.

Differences Between Means at First Session - Study One

	Mothers Not Followed vs. Mothers of At-Risk Children			Mothers Not Followed vs. Mothers of Normal Children		
	t	df	variance accounted for	t	df	variance accounted for
Anxiety	1.32	93	1.8%	.82	99	0.7%
Career Sentiment	1.73	93	3.1%	3.16*	99	9.2%
Home-Parental Sentiment	.21	93	0.0%	.48	99	0.2%
Superego	1.49	93	2.3%	1.38	99	1.9%
Self-Sentiment	5.02*	93	21.3%	.12	99	0.0%
Sweetheart-Spouse Sentiment	.46	93	0.2%	1.02	99	1.0%
Expectations	1.00	93	1.1%	1.69	99	2.8%
Developmental Beliefs	4.56*	93	18.3%	.78	99	0.6%
Operant Beliefs	1.44	93	2.2%	1.01	99	1.0%
Knowledge	3.11*	93	9.4%	1.37	99	1.9%

*$p < .025$

$< .025$). As can be seen in Table 5, the mothers of normal children who were followed were significantly higher in career sentiment than the mothers of normal children who were not followed, $\underline{t}$ (99) = 3.16, $p < .025$. The mothers of at-risk children were significantly higher than the mothers who were not followed on the variables of self-sentiment, $\underline{t}$ (93) = 5.02, $p < .025$, developmental beliefs, $\underline{t}$ (93) = 4.56, $p < .025$, and knowledge, $\underline{t}$ (93) = 3.11, $p < .025$. Since self-sentiment is positively correlated with age (Cattell et al., 1964) and developmental beliefs and knowledge are correlated with education (see below) this finding reflects, in part, the slightly higher (but not statistically significant) age and educational level of the mothers of at-risk children.

Follow-up Sessions

In the follow-up sessions, only six matched pairs completed each of the four testing sessions. Because of this small sample size, only three dependent variables were used in these follow-up analyses. These variables were picked a priori on the basis of differences found in previous research. Thus, the variables of anxiety, self-sentiment, and expectations were used (see Appendix D, Table 18, for mean scores). To evaluate group differences and time changes, two 2(group)-x-4 (time) analysis of variance (ANOVA) tests were used for the variables of anxiety and self-sentiment. For expectations a 2 (group)-x-3 (time) ANOVA was used. The matched pairs were used as the basic unit. Thus, both dimensions of each of the three ANOVA's were within-pairs factors because the samples were dependent. The assumption of homogeneous covariances between the within-pairs factors was evaluated using the Mauchly test for each ANOVA. When the assumption was not supported, both the conventional F and the conservative Box adjustment, which reduces the degrees of freedom for the worst possible violation of the assumptions, were examined. When the conservative probability was less then alpha equals .05, the F was considered significant. However, if the conservative F probability was greater than .05 and the conventional probability was less than .05, the Box-Greenhouse-Geiser index was used. The technique reduces the degrees of freedom of the F as a function of the degree of violation of the assumptions, i.e., the degree of heterogeneity of covariances (Games, 1975). When the F ratio was significant, follow-up statistical analyses were done with the Tukey Wholly Significant Difference (WSD) (Games, 1971). When there were significant interactions involving the within-pairs factors, the Satterthwaite computation of the mean square error and degrees of freedom were used (Games, 1975; Satterthwaite, 1946).

The summary of the three ANOVA's is presented in Table 6. A significant interaction of group and time was found for the variable of anxiety (F (3, 15) = 5.49, $p < .05$). This interaction is graphed in Figure 4. Mothers of at-risk children showed increasing anxiety across the four sessions, while the anxiety of mothers of normal children decreased across the first three sessions. As a follow-up to these comparisons, Tukey WSD's were used to test the differences between the means. None of the differences were significant. A significant group effect was found for the variable of self-sentiment (F (1, 5) = 8.73, $p < .05$). Mothers of at-risk children had greater self-sentiment than mothers of normal children. No significant interactions, group effects or time differences were found for the

TABLE 6.

Summary of ANOVA'S - Study One

	Dependent Variable								
	Anxiety			Self-Sentiment			Expectations		
Source	F	df	ε^2	F	df	ε^2	F	df	ε^2
Group (type of child)	2.07	1, 5	15.1%	8.73*	1, 5	56.3%	.73	1, 5	0%
Time	.44	3, 15	0%	2.08	3, 15	15.3%	.66	2, 10	0%
Group x Time	5.49*	3, 15	42.8%	.27	3, 15	0%	.11	2, 10	0%

Note. ε^2 is an unbiased estimator of the proportion of variance predictable from the group means (Cohen, 1965).

*$p < .05$

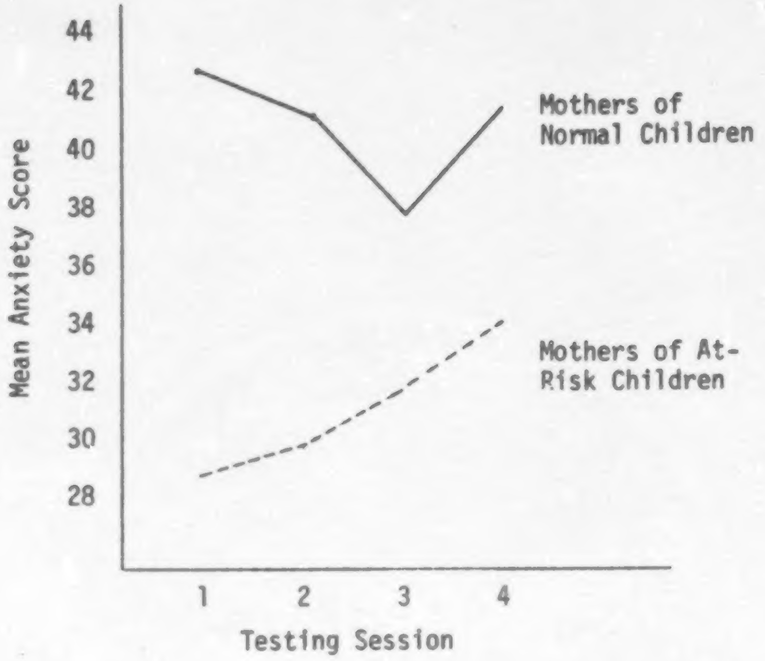


Figure 4. Two-way Interaction of Time and Group for Anxiety in Study One.

variable of expectations.

Correlations

Correlations among the measures at each time of testing were computed separately for each group using all of the follow-up data completed for each time. In the group of mothers of at-risk children, fourteen complete protocols were available at time 1, ten at time 2, eight at time 3, and six at time 4. In the control group, twenty mothers completed the tests at times 1 and 2, nine at time 3, and ten at time 4. However, because of the small sample size, correlations are also reported for alpha less than .10 if the shared variance was greater than 25%. The correlations are reported in Table 7.

The correlations showed a lack of significant stability coefficients for expectations in both groups of mothers and for self-sentiment in mothers of at-risk children. There were also group differences in the relations among the three variables; these patterns are discussed in Chapter V.

Results - Study Two

Similar to the first study, the data from the second study were analyzed for group differences for changes across time and for the correlations between measures at different times. In addition, the data were compared to the data from the mothers who experienced only the final testing session to evaluate the effect of repeated testing. All ten dependent variables were used in the data analyses for this study.

TABLE 7.

Correlations of Variables - Study One

	Mothers of Normal Children	Mothers of At-Risk Children
Anxiety (Anx)		
Time 1	Anx 2, 3	Anx 2, 4; Exp 1
Time 2	Anx 1	Anx 1, 3*, 4; Exp 1
Time 3	Anx 1; Exp 4	Anx 2*, 4
Time 4		Anx 1, 2, 3; SS 2*
Self-Sentiment (SS)		
Time 1	SS 2, 4	
Time 2	SS 1	Anx 4*
Time 3		
Time 4	SS 1; Exp 1	
Expectations (Exp)		
Time 1	SS 4	Anx 1, 2
Time 2		
Time 4	Anx 3	

Note: All correlations are positive and significant at $\alpha = .05$ with the exceptions noted below.

*$r > .75$, $p < .10$

Group and Time Differences

Ten analysis of variance tests were used to examine the data for any group or time differences.[2] For the six anxiety and motivation variables, the test was a 2 (group)-x-3 (time) ANOVA. Four 2 (group)-x-2 (time) ANOVA's were used to evaluate the anticipatory socialization variables. The matched pairs were again used as the basic unit of analysis, and both the group and time dimensions were within-pairs factors.

The data from the 35 pairs who completed all three testing sessions were used in the first set of analyses (the means are listed in Appendix D, Table 19). As can be seen in Table 8, no significant interactions, time effects, or group differences were found for the anxiety and motivation variables. The summary of the analyses for the anticipatory socialization variables is presented in Table 9. No significant two-way interactions were found for these variables. For the variable of operant beliefs, there was a significant group difference, with mothers of at-risk and handicapped children having a higher score than mothers of nonrisk children ($\underline{F}$ (1, 34) = 4.84, $p < .04$). Significant time effects were found for knowledge and expectations. For the variable of knowledge, mothers achieved a higher score at time 3 than at time 1 ($\underline{F}$ (1, 34) = 8.07, $p < .01$). Mothers showed higher expectations at time 1 than at time 3 ($\underline{F}$ (1, 34) = 4.33, $p < .05$).

For the above ANOVA's, the mothers of handicapped and at-risk children were combined into one group. Since this classification actually represented two groups (see Appendix C), additional ANOVA's were done to look at the mothers of at-risk children and the mothers

TABLE 8.

Summary of ANOVA's for Personality and Motivation Variables
in 35 Marched Pairs - Study Two

	Dependent Variables[a]											
	Anx[b]		Ca[b]		HP[b]		SE[b]		SS[b]		SW[b]	
Source	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2
Group df = 1, 34	.36	0%	.27	0 %	.13	0%	.94	0%	.80	0%	1.04	.1%
Time df = 2, 68	2.96	5.3%	1.73	2.0%	2.70	4.6%	1.01	0%	2.25	3.4%	.38	0%
Group x Time df = 2, 68	1.30	.8%	1.56	1.6%	1.66	1.9%	1.16	.5%	1.62	1.7%	1.94	2.6%

Note: ε^2 is an unbiased estimate of the proportion of variance predictable from the group means (Cohen, 1965).

[a] Variables: Anx = anxiety, Ca = Career Sentiment, HP = Home-Parental Sentiment, SE = Superego, SS = Self-Sentiment, SW = Sweetheart-Spouse Sentiment.

[b] The assumption of homogeneous covariances was not supported for the variable. The degrees of freedom were reduced to 1, 34 for the conservative box adjustment.

TABLE 9.

Summary of ANOVA's for Anticipatory Socialization Variables
in 35 Matched Pairs - Study Two

	Dependent Variables							
	Expectations		Developmental Beliefs		Operant Beliefs		Knowledge	
Source	F	ε^2	F	ε^2	F	ε^2	F	ε^2
Group df = 1, 34	3.54	6.8%	.76	0%	4.84*	9.9%	3.14	5.8%
Time df = 1, 34	4.33*	8.7%	3.82	7.5%	1.63	1.8%	8.07**	16.8%
Group x Time df = 1, 34	1.75	2.1%	.03	0%	1.11	.3%	.12	0%

Note: ε^2 is an unbiased estimator of the proportion of variance predictable from the group means (Cohen, 1965).

*$p < .05$

**$p < .01$

of handicapped children separately.

Mothers of handicapped children. Seven mothers of handicapped children and their matched controls completed all three testing sessions. (See Appendix D, Table 20, for means.) As shown by Table 10, a significant interaction of group and time was found for the variable of career sentiment (F (2, 12) = 4.45, $p < .04$). This interaction is graphed in Figure 5 and shows that mothers of normal children were declining in career sentiment over time while mothers of handicapped children increased their career sentiment from time 1 to time 3. Follow-up tests using the Tukey WSD showed no significant time differences for either group. There was, however, a group difference at time 3 (q (2, 10) = 4.27, $p < .05$), showing that mothers of handicapped children were higher than mothers of normal children.

For the anticipatory socialization variables, three main effects were also found to be significant (see Table 11). There was a group difference in parental expectations, with mothers of normal children having higher expectations than mothers of handicapped children (F (1, 6) = 6.32, $p < .05$). Main effects for time were found for the variables of operant beliefs and knowledge of infant development. Mothers scored higher on operant beliefs at time 1 than at time 3 (F (1, 6) = 12.93, $p < .02$). Mothers' knowledge was greater at time 3 than at time 1 (F (1, 6) = 12.93, $p < .02$).

Mothers of At-Risk Children. The completed tests from twenty-eight mothers of at-risk children and their matched controls at all three testing sessions were used in these analyses (See Appendix D,

TABLE 10.

Summary of the ANOVA's for Personality and Motivation Variables in Mothers of Handicapped and Normal Children - Study Two

	Variables											
	Anx[a]		Ca		HP[a]		SE		SS[a]		SW	
Source	*F*	ε^2	*F*	ε^2	*F*	ε^2	*F*	ε^2	*F*	ε^2	*F*	ε^2
Group df = 1, 6	.04	0%	2.99	22.1%	.48	0%	.01	0%	.03	0%	.04	0%
Time df = 2, 12	.16	0%	.50	0%	.29	0%	.29	0%	1.60	21.1%	.09	0%
Group x Time df = 2, 12	1.22	3.0%	4.45*	33.0%	.22	0%	.64	0%	1.23	3.2%	1.18	2.5%

Note: ε^2 is an unbiased estimator of the proportion of variance predictable from the group means (Cohen, 1965).

[a] The assumption of homogeneous covariances was not supported for this variable. The degrees of freedom were reduced to 1, 6 for the conservative box adjustment.

*p < .05

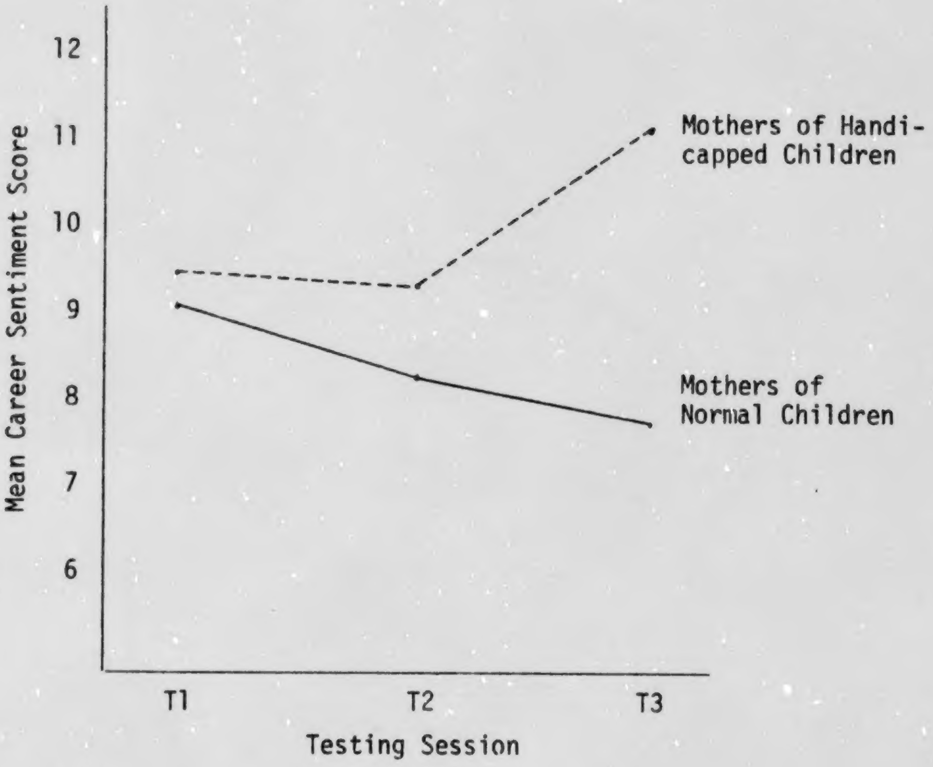


Figure 5. Two-way Interaction of Group and Time for Career Sentiment (Study Two).

TABLE 11

Summary of the ANOVA's for Anticipatory Socialization Variables in Mothers of Handicapped and Normal Children - Study Two

	Variables							
	Expectations		Developmental Beliefs		Operant Beliefs		Knowledge	
Source	F	ε^2	F	ε^2	F	ε^2	F	ε^2
Group df = 1, 6	6.32*	43.2%	1.65	8.5%	1.79	10.1%	3.03	22.5%
Time df = 1, 6	.93	0%	1.47	6.3%	12.93*	63.0%	12.98*	63.1%
Group x Time df = 1, 6	.80	0%	1.47	6.3%	.08	0%	.48	0%

Note: ε^2 is an unbiased estimator of the proportion of total variance predictable from the group means (Cohen, 1965).

*$p < .05$

Table 21, for means.) Tables 12 and 13 show that there were no significant two-way interactions or group main effects. There were, however, main effects for the variables of anxiety ($\underline{F}$ (1, 27) = 5.13, $p < .04$) and self-sentiment ($\underline{F}$ (2, 54) = 4.09, $p < .03$). For the variable anxiety, the mean at time 1 was greater than the mean at time 3, which was greater than the mean at time 2. Using the WSD procedure for follow-up tests, the difference between the mean at time 1 and the mean at time 2 was significant ($\underline{q}$ (3, 54) = 4.19, $p < .05$), and the difference between the means at time 1 and 3 was also significant ($\underline{q}$ (3, 54) = 3.57, $p < .05$). The difference between the means at times 2 and 3 was not significant. For the variable of self-sentiment, the mean at time 3 was greater than the mean at time 2, which was greater than the mean at time 1. Follow-up WSD's indicated that the difference between the means at times 1 and 3 was significant ($\underline{q}$ (3, 54) = 12.73, $p < .01$). The differences between the means at times 1 and 2 and at times 2 and 3 were also significant ($\underline{q}$ (3, 54) = 6.37, $p < .01$ and $\underline{q}$ (3, 54), $p < .01$ respectively).

Since there was a main effect for time for the variable of anxiety and scores for the component factors of anxiety were available, four additional 2 (group)-x-3 (time) ANOVA's were done for the variables of self-control, ego-strength, guilt-proneness, and tension (see Table 12). Significant time effects were found for the variables of self-control ($\underline{F}$ (1, 27) = 5.11, $p < .04$) and guilt-proneness ($\underline{F}$ (1, 27) = 4.58, $p < .05$). For the variable of self-control, mothers were lower at time 1 than time 3 and lower at time 3 than time 2. The difference between the means at times 1 and 2 was significant ($\underline{q}$ (3, 54) = 4.51, $p < .01$), but the differences between

TABLE 12.

Summary of the ANOVA's for Personality and Motivation Variables in Mothers of At-Risk and Normal Children - Study Two

	Variables[a]																			
	Anx[b]		Q_3[b]		C[b]		O[b]		Q_4[b]		Ca[b]		HP[b]		SE[b]		SS		SW[b]	
Source	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2
Group df = 1, 27	.32	0%	.10	0%	2.99	6.6%	.13	0%	.34	0%	2.55	5.2%	.15	0%	1.18	.6%	2.39	4.7%	1.53	1.9%
Time df = 2, 54	5.13*	12.9%	5.11*	12.8%	.02	0%	4.58*	11.3%	2.46	5.0%	1.51	1.8%	3.28	7.5%	1.36	1.3%	4.09*	9.9%	.80	0%
Group x Time df = 2, 54	.98	0%	.65	0%	1.50	1.8%	4.04	9.7%	.99	0%	.39	0%	1.44	1.5%	.67	0%	.89	0%	1.15	.5%

Note: ε^2 is an unbiased estimator of the proportion of total variance predictable from the group means (Cohen, 1965).

[a] Q_3 = Self-control, C = Ego Strength, O = Guilt proneness, Q_4 = Tension

[b] The assumption of homogeneous covariances was not supported for this variable. The degrees of freedom were reduced to 1, 27 for the conservative box adjustment.

*$p < .05$

TABLE 13.

Summary of the ANOVA's for Anticipatory Socialization Variables in Mothers of At-Risk and Normal Children - Study Two

	Variables							
	Expectations		Development Beliefs		Operant Beliefs		Knowledge	
Source	F	ε^2	F	ε^2	F	ε^2	F	ε^2
Group df = 1, 27	.02	0%	.17	0%	.62	0%	.45	0%
Time df = 1, 27	3.37	7.5%	2.40	0%	.29	0%	.06	0%
Group x Time df = 1, 27	.90	0%	.13	0%	1.41	0%	1.66	0%

Note: ε^2 is an unbiased estimator of the proportion of total variance predictable from the group means (Cohen, 1965).

times 1 and 3 and times 2 and 3 were not significant. For the variable of guilt-proneness, the mean at time 1 was higher than the mean at time 2, which was higher than the mean at time 3. Using WSD's the mean at time 1 was significantly higher than the mean at time 3 (q (3, 54) = 4.02, $p < .05$), but the differences between the means at times 1 and 2 and times 2 and 3 were not significant.

Effect of Repeated Testing

The effect of repeated testing was evaluated using a one-factor MANOVA comparing the mothers of normal children who had experienced repeated testing with the mothers who were tested only at time 3. Since these groups were not matched, the groups were independent, and a MANOVA test for independent samples was used. Since some analyses had been done using component factors of anxiety, these four dependent variables were added to the ten main dependent variables for the purpose of this analysis. The MANOVA showed a significant group effect (F (14, 68) = 1.92, $p < .04$). Follow-up t-tests for independent samples on each of the dependent variables were used to examine the nature of this effect (see Appendix D, Table 22). The only significant difference was for the variable developmental beliefs (t (81) = 2.02, $p < .05$), with mothers who experienced repeated testing holding higher beliefs.

Correlations Among Variables

Correlations among the ten dependent variables at each time of testing were computed separately for each group using the data from the forty-two matched pairs available for each time. Forty-two mothers of normal children had completed protocols at times 1 and 3; there were forty-one complete protocols at time 2. Thirty-one mothers of at-risk children completed the testing at times 1 and 2; at time 3 there were twenty-eight completed tests. For mothers of handicapped children, there were ten completed protocols at times 1 and 2, and eight at time 3. Correlations were also done among age, education, and the dependent variables. The alpha level was set at .05. For the mothers of handicapped children, the sample was small, so correlations at alpha less than .10 are reported if the shared variance was greater than 50%. Table 14 presents the significant correlations among the variables at each time of testing separately for each group of mothers. The patterns of these correlations are discussed in Chapter V.

Stability Coefficients. The stability coefficients of the ten dependent variables are presented in Table 15. For the mothers of normal children, all of the stability coefficients were significant. In the mothers of at-risk children, the stability coefficients of self-sentiment were not significant. The stability coefficients of career sentiment, home-parental sentiment, superego, and both developmental and operant beliefs were not significant in mothers of handicapped children.

TABLE 14.

Correlations of Variables - Study Two

	Mothers of Normal Children	Mothers of At-Risk Children	Mothers of Handicapped Children
Anxiety (Anx)			
Time 1	SE 2, 3; Exp 3		KID 3*; OB 3
Time 2	SE 2, 3	SE 1	
Time 3	SE 3		SE 1
Career Sentiment (Ca)			
Time 1	SS 1	KID 3; OB 3	SS 1; DB 1; OB 1
Time 2	Age		SS 3; SW 3; KID 3; Exp 1
Time 3	HP 1, 3; SS 3; KID 1, 3; Age; Ed	OB 3	HP 2; SS 3; SW 2, 3
Home-Parental Sentiment (HP)			
Time 1	Ca 3; SS 1		
Time 2	SS 1, 3; Age		Ca 3; SE 2; SW 2; Exp 1, 3
Time 3	Ca 3; SS 1, 3	SS 1	
Superego (SE)			
Time 1	SS 1; Ed	DB 1; OB 1; Ed; Anx2; SS1; Ed	Anx 3; SW 1
Time 2	Anx 1, 2	SW 1; KID 3; OB 1; Ed	HP 2; SW 1
Time 3	Anx 1, 2, 3		Ed
Self-Sentiment (SS)			
Time 1	Ca 1; HP 1, 2, 3; SE 1	HP 3, SE 1; SW 1, Exp 1	Ca 1; DB 1; OB 1
Time 2	KID 1		Exp 1, 3
Time 3	HP 2, 3; Ca 3		Ca 2, 3; SW 2; Exp 1
Sweetheart-Spouse Sentiment (SW)			
Time 1		SE 1, 2; SS 1	SE 1, 2
Time 2	Age	SE 1	Ca 3; HP 2; SS 3
Time 3			Ca 2, 3; Age; Ed

TABLE 14. (continued)

	Mothers of Normal Children	Mothers of At-Risk Children	Mothers of Handicapped Children
Knowledge			
Time 1	SS2; Ca3; Age; Ed; Exp 1,3; DB 1,3; OB 1,3	DB 1; OB 3; Age; Ed	
Time 3	Ca3; DB 1,3; OB 1; Exp 3; Ed	Ca 1; SE 2; DB 1; OB 1; Age; Ed	Anx 1*; Ca 2; OB 3*
Developmental Beliefs Beliefs (DB			
Time 1	KID 1,3; OB 1,3; Ed	KID 1,3; OB 1,3; Ed	Ca 1; SS 1; OB 1,3
Time 3	KID 1; OB 1,3; Exp 3		
Operant Beliefs			
Time 1	KID 1; DB 1,3; Ed	SE 2; KID 3; DB 1; Ed	Ca 1; SS 1; DB 1
Time 3	KID 1; DB 1,3	Ca 1,3; KID 1; DB 1, Ed	Anx 1; KID 3*; DB 3
Expectations (Exp)			
Time 1	KID 1	SS 1	Ca 2; HP 2, SS 2,3
Time 3	Anx 1; KID 1,3; DB 3		HP 2, SS 2
Age	Ca 2,3; HP 2; SW 2; KID 1		
Education (Ed)	Ca 3; SE 1; KID 1,3; DB 1; OB 1	SE 1,2; KID 1,3; DB 1; OB 1,3	SE 3; SW 3

NOTE: All correlations are significant at .05 with the exceptions noted below.
Negative relationships are underlined

*r > .70; p < .06

TABLE 15.

Stability Coefficients for Variables of Study Two

	Mothers of Normal Children	Mothers of At-Risk Children	Mothers of Handicapped Children
Anxiety			
time 1-time 2	.87***	.88***	.89***
time 2-time 3	.92***	.93***	.95***
time 1-time 3	.87***	.88***	.91***
Career sentiment			
time 1-time 2	.63***	.50**	.53
time 2-time 3	.63***	.69***	.92***
time 1-time 3	.34*	.52**	.39
Home-parental			
time 1-time 2	.56***	.76***	.47
time 2-time 3	.81***	.55**	.09
time 1-time 3	.52***	.67***	-.15
Superego			
time 1-time 2	.46**	.39*	.78**
time 2-time 3	.74***	.66***	.000
time 1-time 3	.43**	.27	.25
Self-sentiment			
time 1-time 2	.61***	.31	.62
time 2-time 3	.64***	.09	.88**
time 1-time 3	.50***	.35	.38
Sweetheart-spouse			
time 1-time 2	.45**	.44*	.49
time 2-time 3	.48**	.43*	.94***
time 1-time 3	.46**	.44*	.09
Expectations			
time 1-time 3	.75***	.73***	.96***
Developmental beliefs			
time 1-time 3	.63***	.61***	.08
Operant beliefs			
time 1-time 3	.64***	.76***	.49
Knowledge			
time 1-time 3	.79***	.91***	.90**

*p < .05
**p < .01
***p < .001

Study One and Study Two Comparison

The data in the two studies in this project were designed to be comparable except for the difference in socioeconomic status (SES) and in time of testing. The mothers in the first study were tested prenatally and were low-SES, while the mothers of study two were first tested postnatally and were middle-SES. Thus, a comparison of the two studies examined the role of SES in parental development and changes during later pregnancy. (The means are in Appendix D, Table 23.) This analyses used a 2 (group)-x-2(SES)-x-2 (time) ANOVA. The two groups were mothers of at-risk children (including handicapped children) and mothers of nonrisk children, while SES was classed as either middle or low. In order to make the design balanced, only two times of testing were used, the first and the last testing sessions. This allowed the use of one middle-SES pair who were missing session 2 data. Therefore, there were two low-SES groups of six each from study one and two middle-SES groups of 36 each from study two. Along with SES, group had to be a between-subjects factor since pairs were no longer the unit of analysis. Time was still a within-pairs factor.

Ten ANOVA's were completed; the results are summarized in Table 16. There was a significant main effect for time for the variable of self-sentiment ($\underline{F}$ (1, 80) = 5.27, $p < .03$). Mothers were higher on self-sentiment at the first testing session than at the last session. There was also a significant main effect for SES classification for operant beliefs ($\underline{F}$ (1, 80) = 6.29, $p < .02$) and for sweetheart-spouse sentiment ($\underline{F}$ (1, 80) = 20.93, $p < .01$). Low-SES mothers scored

TABLE 16.

Summary of the Analyses for the Comparison of Study One and Study Two

	VARIABLES[a]																			
	Anx		Ca		HP		SE		SS		SW		Exp		DB		OB		KID	
Source	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2	F	ε^2
Group df = 1,80	1.57	.7%	.03	0%	.04	0%	.38	0%	1.35	.4%	1.20	.2%	1.40	.5%	.01	0%	3.63	3.1%	.60	0%
SES df = 1,80	2.06	1.3%	1.57	.7%	8.31**	8.3%	2.88	2.3%	1.88	1.1%	20.93**	19.7%	.41	0%	10.45**	10.4%	6.29*	6.1%	21.65**	20.3%
Group x SES df = 1,80	1.58	.7%	.00	0%	.03	0%	.03	0%	.09	0%	1.67	.8%	2.89	2.3%	6.36*	6.2%	.16	0%	1.04	0%
Time df = 1,80	1.13	.2%	.18	0%	1.35	.4%	3.85	3.4%	5.27*	5.0%	.19	0%	.61	0%	.35	0%	.74	0%	.88	0%
Group x Time df = 1,80	.31	0%	2.70	2.1%	.13	0%	.09	0%	3.24	2.7%	2.02	1.2%	3.23	2.7%	1.09	.1%	1.91	1.1%	.06	0%
SES x Time df = 1,80	1.83	1.0%	1.56	.7%	6.97**	6.9%	2.48	1.8%	.00	0%	3.12	2.6%	5.54*	5.3%	3.15	2.6¢	.04	0%	7.42**	7.3%
Group x SES x Time df = 1,80	3.77	3.3%	.02	0%	1.33	.4%	5.08*	4.8%	.22	0%	1.02	0%	5.15*	4.9%	4.30*	3.9%	.67	0%	.41	0%

NOTE: ε^2 is an unbiased estimator of the proportion of total variance predictable from the group means (Cohen, 1965).

[a] Exp = Expectations; DB = Developmental Beliefs, OB = Operant Beliefs; KID = Knowledge

*$p < .05$
**$p < .01$

higher in operant beliefs than middle-SES mothers. Middle-SES mothers were higher in sweetheart-spouse sentiment than low-SES mothers.

For the variable of home-parental sentiment, there was a significant two-way interaction between SES and time (F (1, 80) = 6.97, $p < .01$). This interaction is graphed in Figure 6. The means of the low-SES mothers decreased over time while the means of the middle-SES mothers increased. The difference between the means of the SES groups at the last testing session was significant (q (2, 128) = 7.78, $p < .01$). For the middle-SES mothers, the difference between the means at the two testing sessions was also significant (q (2, 80) = 2.94, $p < .05$).

For the variable of knowledge there was also a significant interaction between SES and time (F (1, 80) = 7.42, $p < .01$). The graph in Figure 7 shows that middle-SES mothers gained slightly in knowledge over time while the low-SES mothers decreased over time. The differences between the means of the middle- and low-SES mothers was significant at the first testing session (q (2, 100) = 6.98, $p < .01$) and at the last testing session (q (2, 100) = 10.70, $p < .01$).

There were three significant interactions of group, SES, and time. The graphs in Figure 8 show the interaction (holding group constant) for the variable of superego (F (1, 80) = 5.08, $p < .03$). Using the WSD, for the low-SES mothers of normal children, the mean at the first testing session was higher than the mean at the last session (q (2, 80) = 4.39, $p < .01$). At the last testing session the mean of the low-SES mothers of normal children was higher than the mean of the middle-SES mothers of normal children (q (2, 147) = 3.49, $p < .05$).

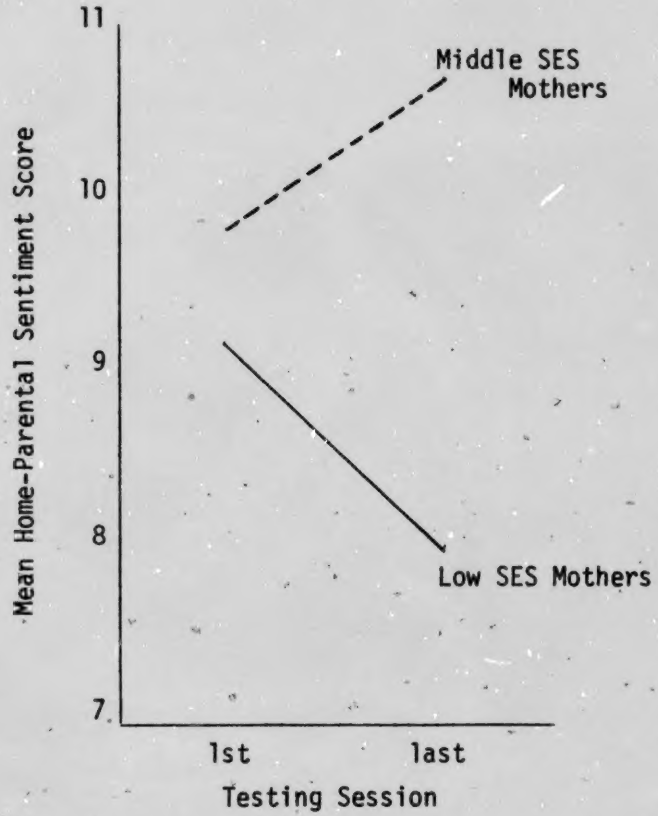


Figure 6. Interaction of SES and Time for Home-Parental Sentiment

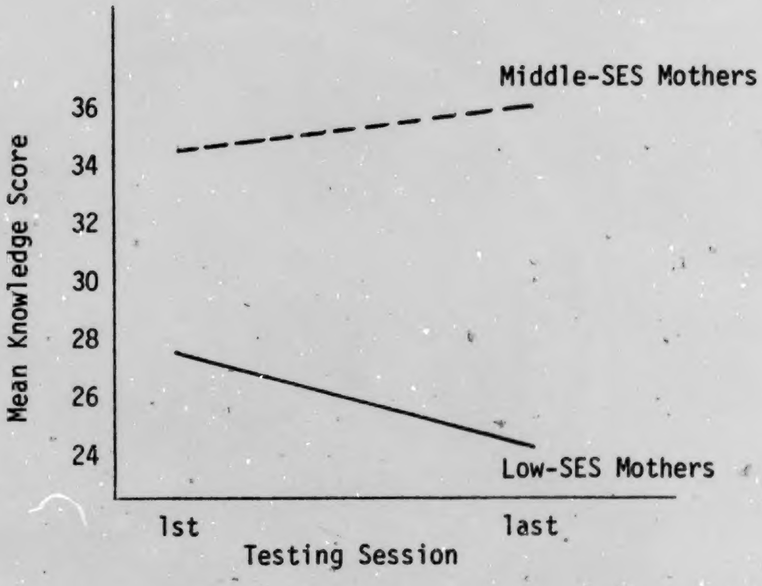
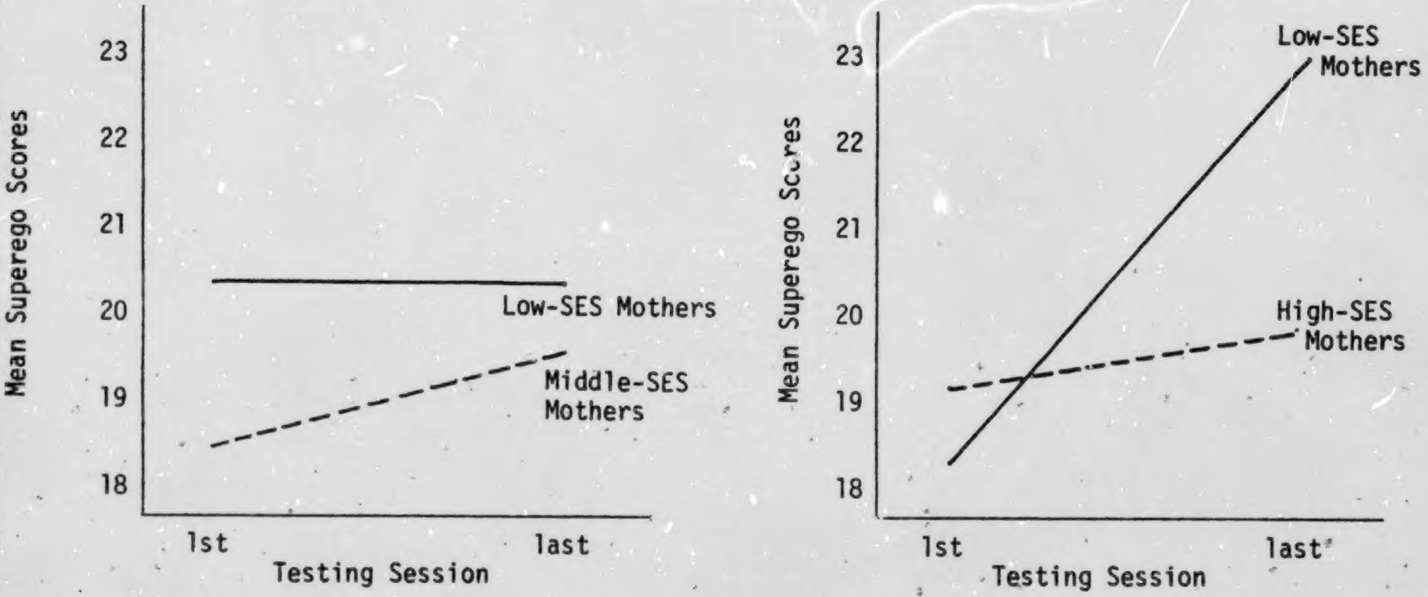


Figure 7. Interaction of SES and Time for Knowledge Score



(a) Mothers of At-Risk Children

(b) Mothers of Normal Children

Figure 8. Interaction of Time, Group, and SES for Superego

The graphs in Figure 9 show the three-way interaction (holding group constant) for the variable of expectations. Low-SES mothers of at-risk children were higher in their expectations than middle-SES mothers of at-risk children at both the first testing session (q (2, 98) = 3.20, $p < .05$) and the last testing session (q (2, 98) = 3.12, $p < .05$). These differences between the means represent, in part, the significantly lower expectations of middle-SES mothers of handicapped children who are included in the group of at-risk children. The mean of the middle-SES mothers of normal children was higher than the mean of the low-SES mothers of normal children at the last testing session (q (2, 98) = 3.56, $p < .05$). The mean of the low-SES mothers of normal children was higher at the first session than at the last (q (2, 80) = 4.63, $p < .01$).

Figure 10 shows the interaction of time, group, and SES for developmental beliefs. For the mothers of normal children, the mean of the middle-SES mothers was higher than the mean of the low-SES mothers at the first testing session (q (2, 128) = 4.34, $p < .01$) and at the last testing session (q (2, 128) = 9.05, $p < .01$). For low-SES mothers at the second testing session, the mean of the mothers of at-risk children was higher than the mean of the mothers of normal children (q (2, 128) = 4.46, $p < .01$). The mean of the low-SES mothers of normal children at the first session was higher than the mean at the last session (q (2, 80) = 3.72, $p < .05$).

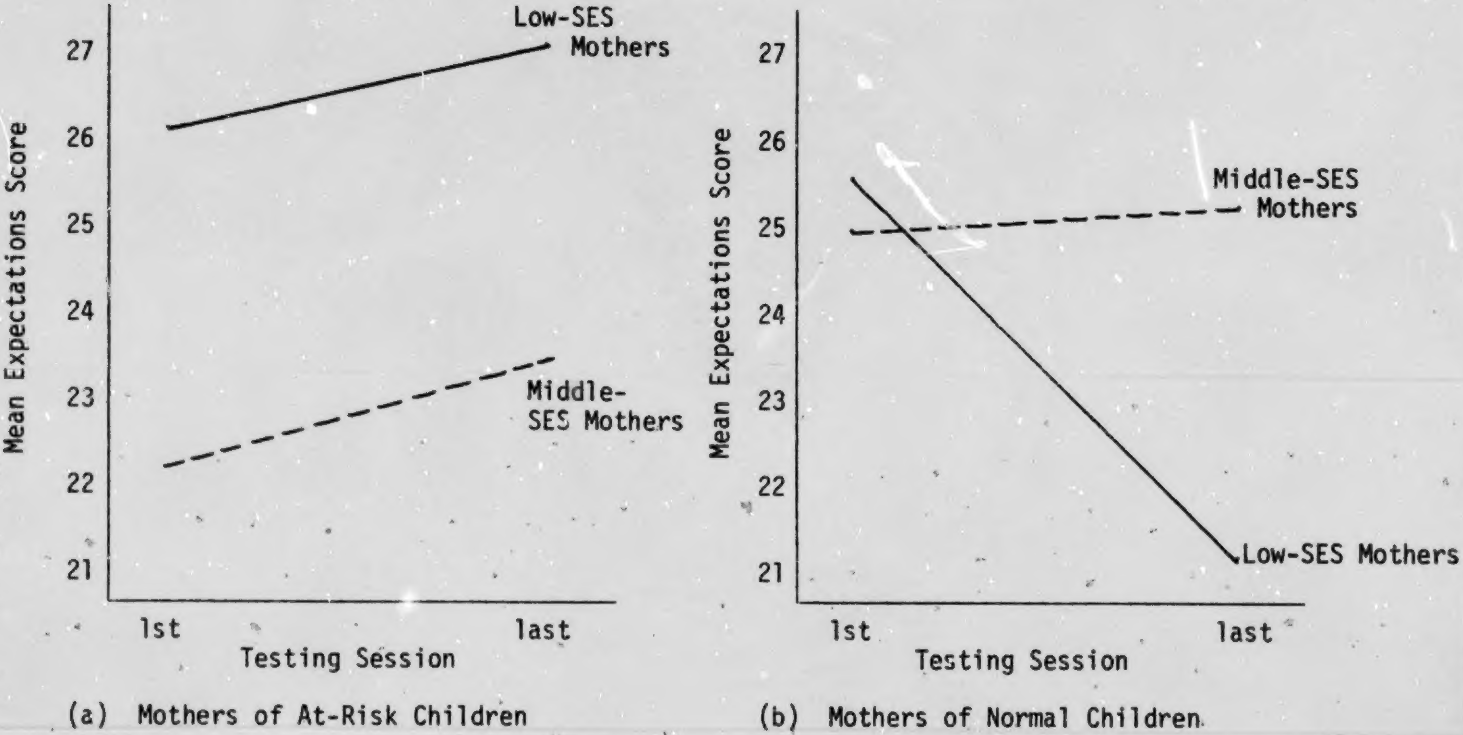
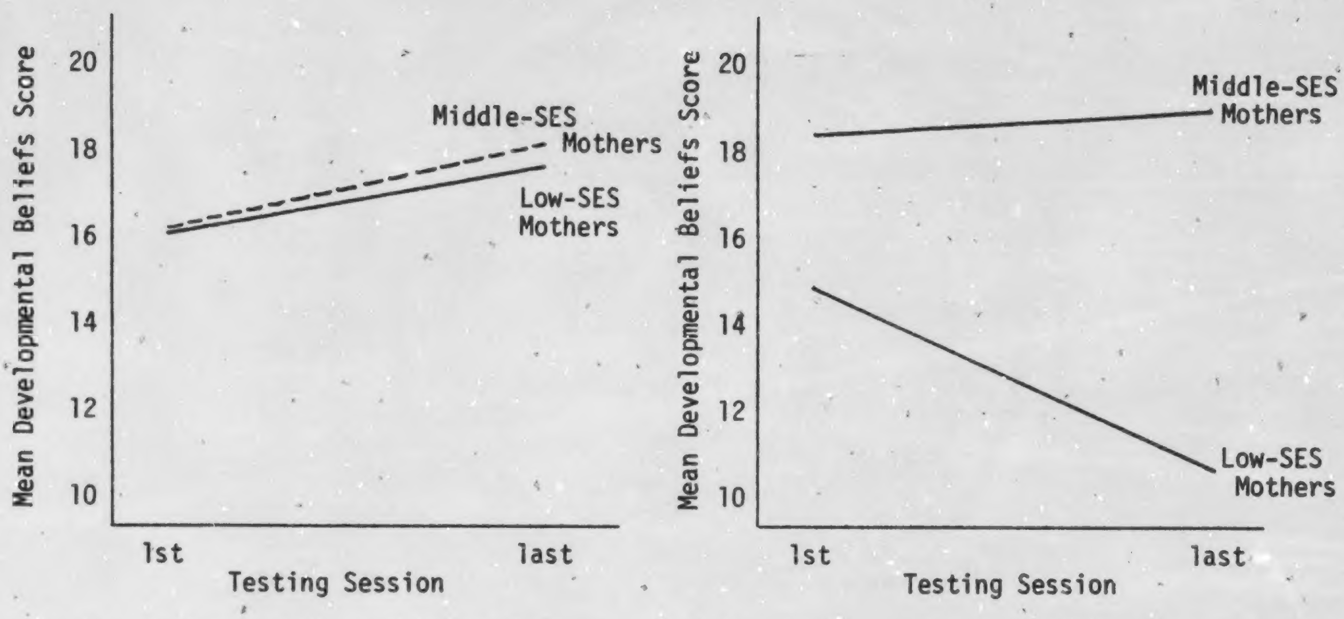


Figure 9. Interaction of Time, Group and SES for Expectations



(a) Mothers of At-Risk Children (b) Mothers of Normal Children

Figure 10. Interaction of Time, Group and SES for Developmental Beliefs

CHAPTER V

DISCUSSION

The findings of any research can best be understood within the context of the conceptualization and corresponding design of the study and in relation to associated work. This chapter thus interprets the results of this project in relation to the design of its studies and to previous work on parental development. The first section discusses the results of the first study, which started assessing high-risk mothers prenatally. This is followed by the interpretation of results from the postpartum assessment of middle-SES mothers that was done in study two. The third section analyzes the results of the comparison of the two studies. Finally, the limitations of this project are used to outline necessary further research. To facilitate this discussion, each section includes a brief statement of the findings.

Study One

The focus of the first study in this project was to provide prenatal and postpartum data on the development of first-time mothers of at-risk and normal children. Because of the difficulty of predicting prenatally which women will have at-risk children, the sample for this study was selected from a population in which the likelihood of women having at-risk children was maximized. After prenatal testing of 115 women, mothers of at-risk children and matched control mothers of normal children were tested in three postpartum sessions. Unfortunately, only a small sample of matched pairs (n=6) completed all four testing sessions.

Representativeness of Follow-up Samples

The representativeness of the follow-up sample was tested by the first set of analyses. When the 20 mothers of normal children who were followed were compared to the 81 mothers who were not followed, the mothers who were followed were higher in career sentiment. The difference is not attributable to employment status since 76% of the mothers who were followed were working or in school compared to 70% of the mothers who were not followed. The importance of this difference cannot be examined with the data in this study since career sentiment was not used to compare mothers of at-risk and normal children. The finding of no other significant differences implies that the mothers of normal children who were followed were not different from other first-time mothers at the Temple University prenatal clinic, except in career motivation.

The women who were later to have at-risk children showed higher self-sentiment, developmental beliefs, and knowledge prenatally than the other high-risk, first-time mothers. The meaning of these differences cannot be explicated with these data alone. The three variables correlate with age or education, and these mothers were slightly older and better educated than the mothers who were not followed. However, less maternal education and younger maternal age (if below 30 years) are predictors of at-risk classifications in children (Babson, Benson, Benda, and Pernoll, 1975). This relationship did not hold for this sample of mothers of at-risk children, but a sample of 14 is certainly too small to suggest that higher self-sentiment, developmental beliefs, and knowledge are valid predictors of having an at-risk child.

Follow-up Sessions

The finding of no time differences must be understood in relation to the design of the study. The completely crossed ANOVA design, i.e., having all factors as within-subjects, is an extension of the dependent _t_-test. This design is more powerful than treating groups (risk vs. non-risk children) as between subjects factors if the use of pairs, i.e., the matching, increased the covariances between subjects. Since the error term used in the _F_ ratio equals the mean of the variances minus the mean of the covariances, this reduction in the error term usually more than makes up for the loss in degrees of freedom. However, the small size of the sample available for follow-ups (n=6) greatly reduced the statistical power to detect differences. Thus, there might well have been time differences which this project was unable to detect.

Mothers of at-risk children were found to have higher self-sentiment than mothers of normal children. This finding conflicts with findings of lower self-esteem in mothers of at-risk children (Cummings et al., 1966; Greenberg, 1979). Two reasons for this may be proposed. First, these mothers of at-risk children may have been a select sample, and their high self-sentiment was unrelated to their having an at-risk child. This explanation is consistent with the finding of higher prenatal self-sentiment in these mothers. A second explanation is that the high self-sentiment of these mothers was both cause and effect of the successful outcome of their children's medical crises. The mothers of children with more serious disabilities and less successful outcomes did not complete all the testing sessions. (See Appendix C for list of disabilities.) The other research (Cummings et al., 1966; Greenberg, 1979) examined middle-SES mothers of at-risk children. For these low-SES mothers, high self-sentiment may be a valid predictor and outcome of successfully managing the children's medical crises. This explanation is also consistent with the lack of significant stability coefficients for the mothers of at-risk children. This lack of stability suggests that self-sentiment was changing across the testing sessions, although the ANOVA's did not reveal any time differences. A comparisons of these two explanations requires additional research with a larger sample of mothers of at-risk children and follow-up tests on mothers when the outcomes of the crises were less positive.

Correlations

Mothers of at-risk and normal children had different patterns of correlations between the different measures. In the control group higher prenatal expectations were related to higher self-sentiment at time 4, sharing 32% of the variance. Higher anxiety at time 3 was related to higher expectations at time 4 (76% shared variance). However in the mothers of at-risk children, there was a different pattern for parental expectations. This finding suggested that women who had high prenatal expectations and subsequently had at-risk children had higher anxiety prenatally and in the maternity ward

(34% shared variance for both). Expectations at time 4 were not related to anxiety or self-sentiment at any of the four times. Self-sentiment at time 2 was related to anxiety at time 4 (56% shared variance) for these mothers.

Summary

Because of the small sample size and resulting lack of statistical power, it is unadvisable to conclude that the transition to parenthood in low-SES mothers does not bring changes across time. The patterns of covariation show low stabilities, especially for expectations and self-sentiment in mothers of at-risk children. This may show that the tests had low reliabilities for these mothers or that the variables were actually changing. Additional research which examines short-term reliabilities with equivalent forms and has a larger sample size is necessary to differentiate between low reliabilities and changes across time. The importance of the difference in self-sentiment between mothers of at-risk and normal children must also be evaluated by further research. It may be that the mothers of at-risk children in this study are a select sample. It may also be true that the higher self-sentiment was related to the successful resolution of the children's crises.

Study Two

In order to provide greater external validity for the project as a whole, the purpose of the second study was to examine parental development in middle-SES, first-time mothers. In addition, data collection began in the first four months postpartum so that a larger sample of mothers of at-risk and handicapped children could be included. Since the design of the study was longitudinal, a control for repeated testing was also included in this study.

Group Differences

In examining differences between mothers of normal, at-risk and handicapped children, group differences were found for the variables of operant beliefs for the total sample and for parental expectations and career sentiment in the pairs of mothers of normal and handicapped children. Mothers of at-risk and handicapped children held greater operant beliefs than mothers of normal children, implying that mothers found operant principles to be more helpful in explaining the behavior of at-risk and handicapped children than in explaining the behavior of normal children. This idea is consistent with the focus of many current intervention programs for exceptional infants that have operant principles as a base (cf. Hanson, 1977). The lack of group differences when mothers of at-risk children were separated from mothers of handicapped children is somewhat confusing. However, for the matched pairs of mothers of handicapped and normal children, group differences accounted for 10% of the variance. For the total sample the group difference accounted for 12% of the variance, so the small sample size (n=7) may have resulted in too little statistical power to reveal differences between mothers of handicapped and normal children. Mothers of handicapped children were higher in operant beliefs further suggesting that mothers found operant principles more appropriate for handicapped children than for at-risk children.

The group difference between mothers of handicapped and normal children in expectations is not surprising since the measure was designed to differentiate mothers as a function of their estimates of their children's abilities. The expectations of the mothers of handicapped children ranged from 0, the lowest possible expectations, to 27, showing seven above-average expectations. In terms of the model of this research, the above-average expectations suggest that some mothers of handicapped children were nonsensitive to their child's deviance. Some of these handicapped children may have been exhibiting essentially normal development in this period, but the prognosis was for subsequent deterioration. The mothers of these children may have seen little evidence of their child's impairment and thus were nonsensitive to its implications. However, the high expectations of these mothers also may represent denial. For example, one mother of a Down's syndrome child had extremely high expectations (a score of 27 out of 30) in spite of her daughter's atypicial functioning and information about the prognosis for her child. In cases such as this, evaluations of the mother's expectations can document maternal denial and suggest intervention to make the mother sensitive to her child's handicap and its implications.

The higher career sentiment of mothers of handicapped children at the last testing session may represent either a definition of motherhood as a career or a rejection of the demands of mothering a handicapped child in favor of a career. Many of the LMAT items could reflect commitment to motherhood as a career. The sentiment in items such as, "A person with time to read could use it better finding how to do still better at work" or the paired words of "important-home" and "home of learing" might conceivably refer to a career of mothering. Alternatively, career sentiment might refer to employment outside the home. An understanding of the higher career sentiment of mothers of handicapped children thus requires further delineation of what the mothers see as their careers.

Other group differences are more conspicuous by their absence, particularly for the variables of anxiety and self-sentiment. The finding of no group differences conflicts with other researcher's findings of differences in self-esteem and anxiety (Cummings, et al., 1966; Erickson, 1968, 1969; Greenberg, 1979; Goodstein, 1960; McMichael, 1972). This discrepancy may be explained in two ways. First, the group differences may come later. The other researchers studied mothers of preschool- and school-aged children. In contrast, the mothers in this study had less than 6 months of interaction with their children. Even though many of the diagnosed handicaps were severe, e.g., Down's syndrome, and meningomyelocele, these handicapped children would not be functioning at levels that were much below the norm during this 6 month period. Maternal recognition of the awesome responsibility of caring for a handicapped child may come later and lead to group differences then. A second explanation may be that some of the earlier research was done with select samples, those mothers who were in need of psychological counseling. These samples appear to predominate in the psychoanalytic case studies and give a biased picture of the development of mothers of handicapped children. These two explanations are not incompatible, and both may account for the lack of group differences in self-sentiment and anxiety in this research. This lack supports the ideas of Barsch (1968) and Hewett (1970), and the findings suggest that most mothers of handicapped children show a normal pattern of development during their children's early months.

Time Differences

The findings of significant changes across time should be examined in light of the effect of repeated testing. The only significant effect of the repeated testing was to raise developmental beliefs. Since the mothers' developmental beliefs increased from time 1 to time 3, an adjustment of repeated testing would have the effect of decreasing the developmental beliefs over time. However, the decrease from time 1 to time 3 would not be significant.

Since none of the other variables were affected by repeated testing, the changes across time may be interpreted without adjustments. In the total sample, the anticipatory socialization variables of knowledge and expectations increased over time. This finding implies that socialization into the role of motherhood continued after the birth of the baby. An increase in knowledge of child development might logically be expected after mother-child interaction. When the previous knowledge may have been lacking, as in the case of knowledge about handicapped children, the changes across time accounted for a larger percentage of the variance (68% for pairs of handicapped children and normal children versus 19% for the total sample). However, a group difference between mothers of handicapped and normal children was lacking for the variable of knowledge.

The mean increase in expectations was slight, but may reflect the mothers' feelings of competence in their parenting and thus in their abilities to positively influence their children's development. This idea is supported by the finding of an increase in self-sentiment over time in mothers of at-risk and normal children. Self-sentiment in mothers of handicapped children increased from time 1 to time 2 and then declined from time 2 to time 3. This suggests that these mothers may not experience effectiveness in mothering over time, and thus, their self-sentiment declined. These ideas inter-relating competence in parenting and self-sentiment are consistent with the model proposed by Goldberg (1977) relating maternal feelings of effectiveness, the abilities of the child, and maternal self-esteem.

The change over time in anxiety in mothers of at-risk children presents a clear picture. Anxiety declined from time 1 to time 2 to time 3. Since the medical crises which their children experienced were successfully resolved during this time, the decline in anxiety and in its component of guilt-proneness in mothers of at-risk children is not surprising. Anxiety and guilt-proneness in mothers of normal children and low self-control in mothers of at-risk and normal children present a different picture. These variables are greatest at session 1, they decline in session 2, and then they increase in session 3. It may be proposed that mothers had the greatest anxiety at time 1 because that was when their competence in mothering was most uncertain. By time 2, they had established a routine with their babies, had greater self-control and had lower anxiety. Between time 2 and time 3, however, the babies entered a new period of development, family schedules were disrupted, and increased anxiety was the result. However, anxiety was not as high as initially because the mothers had had some effectiveness in mothering. Research which evaluates the development of the children is necessary to confirm this speculation.

These time differences suggest that the transition to parenthood can be a source of change and that one-tenth to one-fifth of the variance may be predicted from the changes in group means. For the variables which were more child-related, i.e., the anticipatory socialization variables, and for the pairs of mothers of handicapped and normal children, changes across time accounted for much more of the variance, 68%. This finding suggests that the child-related variables are more susceptible to time-related changes when the anticipatory socialization is ineffective, i.e., when the child is handicapped. However, the lack of group differences in these particular variables modifies this suggestion, unless the small sample size resulted in too little statistical power to reveal group differences.

Patterns of Correlations

When examining the covariations among measures two group differences emerge. First there is a difference in the stabilities of the measures. For the mothers of normal children, all of the stability coefficients were significant, most were above .50, and the lowest was .34. For the mothers of at-risk children. the pattern is similar except for the variable of self-sentiment which has stabilities ranging from .09 to .35. The stabilities were very different for mothers of handicapped children, even accounting for the small sample size. Self-sentiment in these mothers was fairly stable, but home-parental sentiment, superego, and developmental beliefs were not. As with the low stabilities in study one, further research with equivalent forms and larger samples is necessary to differentiate between the possible explanations of lack of reliability and changes across time in these variables. Assuming that further research shows that the measures are reliable and that these variables are changing, the following reasons for the changes may be hypothesized.

The mean score for developmental beliefs increased across time in mothers of handicapped children. The developmental items show confidence in the children's abilities to do things by themselves and without adult influence, e.g., "A child's own interest in an activity is a reward; a parent does not need to provide other rewards," or "How children work and play is more important than what they produce." Change in this variable implies that mothers of handicapped children were stressing their children's abilities more and giving less credence to parental influences. This is consistent with the finding of a significant mean decrease in operant beliefs. The group differences and time-related changes for operant and developmental beliefs taken together show that originally mothers of handicapped children emphasized parental roles in their children's development. They changed over time and began to stress the importance of their children's abilities in determining their children's development. This change may reflect disappointment that parental actions are not capable of erasing the children's handicaps.

High superego sentiment signifies a high level of conscience development, i.e., acceptance of socio-parental sanctions, and may indicate a high level of dependability (Cattell et al., 1965). The means for superego in mothers of handicapped children declined from time 1 to time 2 and then increased to time 3. In mothers of normal and at-risk children, the means increased over the three sessions. The increase in superego of first-time mothers probably shows an acceptance of the increased responsibility that motherhood brings. The initial decline and subsequent increase in superego in mothers of handicapped children may reflect these mothers' possible confusion and anger over the even greater responsibility associated with caring for handicapped children.

Home-parental sentiment reflects the importance of the parental home, i.e., the mother's parents and their home. The mean for this sentiment declined showing that mothers of handicapped children saw their parents as less important over the time period studied. This may be the result of the parents' dismay over the birth of a handicapped grandchild and an associated loss of contact between the mothers and their parents. It may also reveal the mothers' dismissal of their parents as models for the rearing of their handicapped children.

Caution should be exercised in accepting any of these propositions since the changes in means described above were not statistically significant in this research. The ideas are advanced simply as possible hypotheses for additional research with larger sample sizes and greater statistical power.

Interrelationships Among the Variables. The second group difference in the correlations is in the patterns of interrelationships among the variables. For the mothers of normal children, the anticipatory socialization variables are all interrelated. Knowledge, developmental beliefs and expectations are positively related to each other and negatively related to operant beliefs. This cluster is positively related to education and negatively related to career sentiment. The pattern was somewhat similar in mothers of at-risk children, except that expectations were not interrelated and superego was negatively related. At the first testing session, the expectations of these mothers were related to self-sentiment. Since self-sentiment changed over time, it is not surprising that expectations were not related to self-sentiment at other times. The clustering of these variables is logical since they represent preparation for the maternal role, i.e., anticipatory socialization. The relation of this cluster to successful parenting is an interesting question for later research. The relationship should be investigated in working versus nonworking mothers because of the negative relationship of career sentiment.

For the mothers of handicapped children, the cluster is not the same. Knowledge was not related to beliefs, either developmental or operant (except knowledge 1 to operant 3), or to expectations. Anxiety at time 1 however was positively related to operant beliefs at time 3 and negatively related to knowledge at time 3. The initial expectations of these mothers positively related to later career and home-parental sentiments and negatively related to later self-sentiment. Career sentiment 2, in turn, was negatively related to later self-sentiment and sweetheart-spouse sentiment, and home-parental and self-sentiments at time 2 were negatively related to expectations at time 3.

Although these correlations cannot show causality, they are time-ordered, and thus, a description of the development of mothers of handicapped children may be proposed. The initial expectations of these mothers are lower than mothers of normal children, suggesting that their estimations about their children's futures were revised after the birth of the handicapped child. High initial expectations led to a decrease in self-sentiment over time, possibly because the baby did not meet the mother's expectations, as in Goldberg's (1977) model. Self-sentiment increased over time when the initial expectations were low suggesting that low initial expectations preserved the mother's feelings of competence. In turn, high self-sentiment depressed expectations over time, while low self-sentiment kept expectations high. When the mother's initial expectations were high, the importance of their parental home and their career (of motherhood?) increased over time. However, high career sentiment in turn led to lower sweetheart-spouse and self-sentiments. This picture may be clearer if these mothers were defining motherhood as their career of these mothers (since, indeed, it often must be for the mothers of handicapped children). An increase in the importance of their career of motherhood decreases the importance of the husband and the self. Thus, the correlations could suggest that these women were redefining themselves more as mothers (as shown by the increase in career sentiment) and less as wives and persons. The lowered self-sentiment would be consistent with higher initial expectations which were not being met over time.

Research on the above ideas would require differentiating mothers of handicapped children on the basis of their initial expectations. Since the sample in this study was too small to allow this, further research is necessary to confirm this suggested pattern of maternal development. Such research should examine motivations as a function of initial expectations and define what the mothers see as their careers.

Summary

The findings of study two suggest parenthood may indeed be a source of developmental change. Both personality and motivation variables changed across time in the pairs of mothers of normal and at-risk children. The lack of time differences in the pairs of mothers of normal and handicapped children may be the result of a decrease in power resulting from the small sample size. However, it may also be the result of differing patterns of parental development, which over the short time studied, did not bring significant group differences. The correlations of the measures suggest that there is a different pattern of relationships for the mothers of handicapped children. When extended across time, this pattern could result in lower self-sentiments as has been found by other researchers (Cummings et al., 1965; Greenberg, 1979). The group differences between mothers of handicapped and normal children which were found in career sentiment and expectations support this differing pattern of parental development. The lack of group differences between mothers of normal and at-risk children suggests that mothers of at-risk children were not influenced by their child's "riskness." In the terms of the model of this project, they were not sensitive to their children's deviance. If the child's deviance required intervention to prevent further deterioration, this nonsensitive environment would be disadvantageous to the child's subsequent development. However, this study did not assess child variables, so that differentiation on the basis of risk outcomes is impossible. Such differentiation might reveal group differences or where intervention in parental development was necessary to enhance the child's future development.

The study suggests that the anticipatory socialization variables are a cluster, along with career sentiment and education. This cluster is fairly stable and well-defined for mothers of normal and at-risk children. For mothers of handicapped children, the anticipatory socialization has not been efficient because of the unforeseen birth of a handicapped child. Thus, the anticipatory socialization variables do change over time. The cluster of motivation variables and expectations also suggests a pattern of parental development in which self-sentiment, expectations, and competence are interrelated. This is in keeping with Goldberg's (1977) model and with the approach of this research.

Comparison of Study One and Study Two

The data from study one and study two were analyzed in one proportional nested design to examine the role of SES in parental development. In addition, the first testing session was prenatal for the low-SES mothers and postnatal for the middle-SES monthers.

Therefore, if differences were found only at time 1 and not in the last testing session, this might suggest changes during late pregnancy or very early in the child's life rather than an SES factor. However, when there were differences between low- and middle-SES mothers, the differences were at both times or only at the last time, so changes in late pregnancy and the early postpartum period cannot be inferred.

The mothers in the second study were more educated ($\underline{t}$ (110) = 4.67, $p < .01$) and more likely to be married (χ^2 (1) = 71.46, $p < .01$) than the mothers in the first study. These differences are consistent with the definition of the SES construct. The mothers in the second study were also older at the birth of their first child ($\underline{t}$ (110) = 6.08, $p < .01$). The classification of the mothers in the first study as low-SES mothers and the mothers in the second study as middle-SES mothers is consistent with these differences.

SES Differences

The comparison of the middle- and low-SES mothers revealed SES differences for seven of the ten variables. There were SES differences in all four anticipatory socialization variables. This suggests that SES is a critical component of differences in anticipatory socialization for parenthood and agrees with the numerous findings of SES differences in child-rearing (cf. Bayler and Schaefer, 1960; Bronfenbrenner, 1958; Hess, 1970). SES, however, is itself a cluster of variables which describe, but do not explain the differences. SES groupings may reflect such things as income levels, education and marital status (as in this study), cultural mores, and child rearing attitudes. This cluster obviously overlaps with the anticipatory socialization variables in this study, so it is not surprising to find SES differences in them. In short, SES and the anticipatory socialization variables were confounded in this study.

SES differences were found for the motivations of sweetheart-spouse, home-parental, and superego. The higher sweetheart-spouse sentiment of the middle-SES mothers probably indicates the reversal in the percentage of married women between the two SES groups (7% of the low-SES mothers were married versus 94% of the middle-SES mothers). The difference in the marriage pattern and in home-parental and sweetheart-spouse sentiments may also indicate a difference in the support systems used by mothers of differing socioeconomic levels. In terms of the contextual model, the support system will probably influence her parental development so the following ideas may be proposed. Many of the low-SES mothers were living with their mothers, and the grandmothers often took responsibility for infant care. The higher home-parental sentiment in these mothers may indicate that their support came from their parental home. In contrast, the higher sweetheart-spouse sentiment of the middle-SES mothers probably shows that their husbands (as opposed to their parents) provided social, economic, and emotional support. Further research assessing the social network of the mothers is required to confirm these speculations. The lower superego in the middle-SES mothers is not as easily explained, but along with the anticipatory socialization variables, it may be a useful indicator of the meaning of the SES construct. Since superego sentiment indicates a level of conscience development (Cattell et al., 1965) the difference in superego may help to explain the SES difference in the use of authoritarian and democratic child-rearing styles.

Further research is required to examine the association between the SES differences in the variables in this study and the SES differences in parent attitudes and parent-child interaction found in other research (Hess, 1970; Hess and Shipman, 1965; Kamii and Radin, 1967).

Group and Time Differences

Although differences between mothers of at-risk and normal children were indicated by the interaction of group, SES, and time for the variables of superego, expectations, and developmental beliefs, the only significant group difference between these mothers in the follow-up tests was for the variable of developmental beliefs. The absence of differences reflects the lack of differentiation of at-risk and handicapped children which revealed group differences in Study Two. There might also be differences if classification were made on the outcome of the crisis which resulted in the at-risk classification.

The finding of a main time effect for self-sentiment and the significant effects of time in the follow-up tests for home-parental sentiment, superego, expectations, developmental beliefs, and knowledge support the idea that parenthood is a source of change for first-time mothers. The time effects in expectations and beliefs were only for middle-SES mothers while the time effects in superego and knowledge were only for low-SES mothers. This difference again supports the idea that there are SES differences in parental development. However, the time-related changes in self-sentiment occurred in both low- and middle-SES mothers. This finding shows that there are some commonalities in parental development between low- and middle-SES mothers. The time differences in self-sentiment also imply that the ANOVA of the first study did, indeed, lack statistical power to show changes across time. With a larger sample size, the ANOVA which compared the studies was powerful enough to show the time difference.

Suggestions for Further Research

In order to understand the meaning of the results of this project, the limitations of each of the studies should be examined. These limitations also serve to outline ideas for subsequent research.

Study One

The primary limitation of the first study was the small sample which completed the follow-up testing sessions. A greatly reduced sample will always result when trying to obtain prenatal data for women who subsequently have at-risk children. When using high-risk women to increase the likelihood of at-risk classifications for the infants, the researcher is also faced with the problems of doing follow-ups on low-income subjects. The mobility of the population, the lack of telephones, and the reluctance to allow researchers to make home visits are a few of the problems encountered in this study. A larger follow-up sample could probably be obtained if the project lasted more than a year. A duration of two to three years would insure a greater number of mothers of at-risk children and a somewhat greater probability of following them since work stoppages do not occur every year. There was an additional reason for the small sample size of this study. For the year before the study, one out of seven of the first-time mothers at Temple University Hospital delivered an at-risk child. The size of the prenatal sample was selected with this figure in mind, since testing 140 women prenatally would yield 20 mothers of at-risk children if the proportion remained the same. However, for the year in which this project took place, the incidence of at-risk children declined to approximately one in ten.

An additional limitation of this study was the lack of assessment of the infants, except for the at-risk versus nonrisk classification. If the infants were assessed, some differentiation could be made on the outcome of the crisis. Such an examination could reveal whether the mothers were really nonsensitive to their children's risk or whether the care in the intensive care nursery is of little consequence to these infants and mothers. Infant assessment is necessary to evaluate the usefulness of the model used in this research. Since the model proposed that mothers and children influence each other in a circular fashion, more precise information about the child's development is required to more fully understand parental development.

Study Two

One limitation of the second study was again the lack of information about the infant. When the available information was used to differentiate handicapped children from at-risk children, group differences emerged which had been obscured. In addition to the outcome of the crisis, the individuality of the infant, e.g., temperament, may be a factor which contributes to maternal development.

A second limitation of the study was the short time period involved. Following mothers over the first years of their children's lives would probably show more differences between mothers of handicapped and normal children. The longer time period might also show changes in the personality and motivation variables which were stable in this study. The time period might also be extended by assessing mothers during pregnancy. Although the first study did not show changes during late pregnancy, this may be the result of lack of power. Alternatively, changes may occur during early pregnancy rather than the last trimester.

A final limitation of the study was neglect of some variables which themselves might lead to changes and/or differences. In accordance with the contextual model there are often variables on different levels from the individual. The most obvious of these are the impact of marital relationship and the employment status of the mother. Other than matching for marital status, no examination was made of the marital dyad. Further studies should examine development in fathers and indices of the marital relationship, including quality. When looking at maternal employment, there were a number of differentiations which could be made. First, did the mother work during pregnancy, and if so, when did she quit? Did the mother intend to return to work after birth? Did she return to work? Is the mother who is self-employed in her own home, e.g., an architect, a working mother? What about part-time work? Because of the time period examined, i.e., from birth to six months, many mothers who intended to return to work were still at home. A study with a longer time frame could classify mothers on two dimensions: working during pregnancy and working after six months, in order to examine the impact of maternal employment.

Other variables which should be examined come from other life-span research: birth cohort, season of birth, and age. Differences between mothers of varying birth cohorts may be an index of socio-cultural and historical change in parental development. This project controlled cohort effects between the groups of mothers but did not examine them. Age effects were similarly controlled, but not examined, yet differences between older and younger first-time mothers can provide information about the process of anticipatory socialization for motherhood. The season of the child's birth will affect the new mother's social contacts, e.g., it is difficult to protect a very young child from the winter weather, so new mothers may be unable to leave their homes during this season. The mothers themselves highlighted other influences on maternal development. Some of the mothers moved during the study and many of them had moved during pregnancy, often to their first house. Many of them mentioned relations with relatives and husbands as influencing their ideas about motherhood. All of these variables represent possible influences on the mothers during the early postpartum period. Thus, changes in mothers' personality and motivations during these months may be the result of the influence of these variables rather than the transition to parenthood. By categorizing mothers on dimensions such as birth cohort, age, and season of birth, and by examining variables such as contact with relatives and marital interaction, future research can better describe and explain parental development in first-time mothers.

Summary

The major limitations of the two studies were small sample sizes and the short duration of the project. Further research should try to increase the number of low-income mothers and mothers of handicapped children. In addition maternal assessment should begin during early pregnancy and continue through the early years of the child's life. Some assessment of the infant should also be made.

For mothers of handicapped children, there are additional reasons for larger samples and longer time periods. Larger sample sizes may permit the examination of the effect of different disabilities. Longer time periods would allow the inclusion of handicaps which are diagnosed or occur later. Finally, the inclusion of multiparous mothers of handicapped children can more clearly distinguish between the adjustment to parenthood and the adjustment to having a handicapped child.

CHAPTER VI

CONCLUSIONS AND IMPLICATIONS

The purpose of this project was to explore parental development in first-time mothers of handicapped, at-risk, and normal children. Using personality, motivation and anticipatory socialization variables, differences between the groups of mothers, and between the middle- and low-SES mothers were explored. Because the project used a short-term longitudinal design, intraindividual changes across time were also examined. This chapter presents the conclusions of the study by describing parental development and using the group differences to explain, in part, the development of mothers of handicapped children. Since the goal of human development research is the description, explanation, and optimization of development (Baltes, Reese, and Nesselroade, 1977), this chapter also outlines possible applications of the research.

Changes Across Time

The mothers in this project exhibited changes across time in the variables of anxiety, self-sentiment, home-parental sentiment, superego, knowledge, and expectations. Although the analyses in study one did not show time-related changes within the groups, the correlations of the measures showed low stabilities for self-sentiment and expectations. In addition the comparison of the two studies revealed time-related changes in self-sentiment, home-parental sentiment, superego, and knowledge in the low-SES mothers. Time differences accounted for approximately one-tenth to one-fifth of the variance. However, in the analysis of mothers of handicapped and normal children, changes in the anticipatory socialization variables accounted for 68% of the variance. This suggests that when the anticipatory socialization for parenthood has been inefficient because of the birth of a handicapped child, there will be greater changes in the anticipatory socialization variables. In total, the time differences suggest that parenthood can be a source of developmental change.

Group Differences

There were two factors in this study which examined group differences. The comparison of the two studies used SES-level as a factor to explore the role of SES in parental development. Separately, the studies also examined the effect of the type of child, normal, at-risk, or handicapped, on parental development.

SES Differences

Differences between the means of the low- and middle-SES mothers were found for seven of the ten variables used in this study: home-parental sentiment, sweetheart-spouse sentiment, superego, and the four anticipatory socialization variables: knowledge, developmental beliefs, operant beliefs, and expectations. The content of the anticipatory socialization variables overlaps with the definition of

SES as a construct. The SES difference in anticipatory socialization probably reflects the SES differences found in other research.

Mothers of Normal, At-Risk and Handicapped Children

Parental development in mothers of normal and at-risk children was very similar. The only mean differences were in developmental beliefs and self-sentiment for low-SES mothers. No mean differences were found for the middle-SES mothers of normal and at-risk children, and the patterns of correlations for the two groups were analagous. These correlations showed that the anticipatory socialization variables are interrelated and cluster along with career sentiment and education.

Comparisons of mothers of handicapped and normal children revealed mean differences in career sentiment and expectations. The pattern of correlations in mothers of handicapped children was also different from the pattern in mothers of normal children. The anticipatory socialization variables were not interrelated. Both developmental and operant beliefs were less stable in mothers of handicapped children than in mothers of normal children. In mothers of handicapped children, expectations were related to the four sentiment variables of self, home-parental, career, and sweetheart-spouse. This differing pattern of relationships among the variables suggests that across longer time periods additional mean differences might be found between mothers of handicapped children and mothers of normal children. The differences between mothers of handicapped and normal children and the lack of differences between mothers of at-risk and normal children suggests that the birth of a handicapped child is a source of interindividual differences in parental development.

Implications for Application

The finding of changes across time in the knowledge, personality, and motivations of first-time mothers implies that these variables are modifiable during the very early months of their children's lives. This period thus appears to be a potentially fruitful time for parent education and support. Since most intervention programs serving mothers of handicapped children are concerned with beliefs, knowledge, and expectations, this period is a particularly appropriate time for these programs to modify these anticipatory socialization variables.

In terms of the model of this research, the lack of differences between the mothers of at-risk and normal children suggests that further examination be made of this nonsensitive social environment of the very young at-risk child. If the nature of the child's risk requires intervention to prevent deterioration, those working with the mother must first realize that she is nonsensitive to her child's deviance. Efforts should be directed toward modifying her awareness before intervention with the child begins.

In contrast to other research on parents of handicapped children, this study found few differences between mothers of handicapped and normal children. This finding is in clear contrast to the earlier findings of differences in anxiety, self-confept, and guilt between mothers of handicapped and normal children (Cummings et al., 1966; Erickson, 1968, 1969; Greenberg, 1979; Goodstein, 1960; McMichael, 1972). The last few years have brought many changes to handicapped children and their families. For example, legislation and litigation has mandated handicapped children's participation in the regular educational process. It also appears that there is a new openness in dealing with handicapped children. Parents are no longer encouraged to institutionalize the child with disabilities. Instead, they are pressured to be assertive, even aggressive, about the rights of their children. Perhaps it is idealistic, but it may be hoped that the finding of few differences between mothers of handicapped and normal children in this study is a valid indication of a new spirit in dealing with families with handicapped children. Professionals should no longer see these families as pathological and in need of therapy as they have often been portrayed in the psychiatric literature. Instead professionals should acknowledge that during the early months of the children's lives, mothers of handicapped and normal children are more alike than they are different. Since the development of mothers of handicapped children in not unique, "mainstreaming" of these mothers is suggested. Many of these mothers are now segregated with other mothers of handicapped children in infant intervention programs. Additional contact with mothers of normal children could reveal that some of their problems, frustrations, and joys are the result of being a first-time mother and not just associated with their handicapped child.

This study also highlighted the problems in defining handicaps for very young infants. Some of the medical disabilities which were classified as handicaps may be corrected through surgery, e.g., heart defects, or controlled with medication, e.g. seizures. Many of the at-risk children will have no apparent problems later in life, while some of the normal children will. If the field of special education is to be truly effective with intervention in early infancy, there must be more flexible definitions of handicapped. This study implies that some handicaps are preventable through intervention in the child's social network, e.g., the prevention of the vulnerable child syndrome through intervention in the parenting process. However, noncategorical definitions of handicapped are necessary to support such interventions.

In total, the results of this project imply that the early months of a child's life are an appropriate period for parent intervention. Intervention with mothers of at-risk children may modify the potential deterioration of the children. Intervention with mothers of handicapped children might prevent differences between mothers of handicapped and normal children later. Such intervention can make the mothers of handicapped children even more effective change agents for their children.

NOTES

[1] The operation of the prenatal clinic was disrupted by two strikes during the course of the project. The hospital remained open during the strikes, but women were often advised to try to deliver their babies at other hospitals. Some mothers chose not to deliver their babies at Temple at times other than during the strikes. An attempt was made to determine the outcome of the birth for these mothers, but it was usually not possible. The strikes also disrupted the collection of follow-up tests since the mothers often did not come to the pediatric clinic or the postpartum obstetrical clinic.

[2] To examine the data for any group or time effects, in any of the dependent variables, the logical analyses would apparently be two multivariate analyses of variance (MANOVA). The first test would be a 2 (group) x 3 (time) design for the anxiety and motivation variables. Each of the dimensions of MANOVA's would be within-subject factors. Since most programs for MANOVA's use the general linear model, they require building a vector for each unit, in this case, for each matched pair, on the within-subjects factors. Unfortunately, such a program is usually impossible because it requires a great deal of memory. If it is not impossible, it is likely to be inaccurate because of the size of the matrix to be inverted. Since the follow-up tests for a significant MANOVA would be univariate ANOVA's, the data analyses were conducted with these tests.

REFERENCES

Abrahams, B., Feldman, S. S., and Nash, S. C. Sex role self concept and sex role attitudes: Enduring personality characteristics or adaptations to changing life situations. Developmental Psychology, 1978, 14, 393-400.

Aldin, R. R. Parenting skills: Trainer's manual. New York: Human Sciences Press, 1976a.

Aldin, R. R. Parenting skills: Workbook. New York: Human Sciences Press, 1976b.

Babson, S. G., Benson, R. C., Benda, G. J., and Pernoll, M. L. Management of the high risk pregnancy and intensive care of the neonate. (3rd ed.), St. Louis: Mosby, 1975.

Baltes, P. B., and Goulet, L. R. Status and issues of a life-span developmental psychology. In L. R. Goulet and P. B. Baltes (Eds.), Life-span developmental psychology: Research and theory. New York: Academic Press, 1970.

Baltes, P. B., Reese, H. W., and Nesselroade, J. R. Life-span developmental psychology: Introduction to research methods. Monterey, California: Brooks-Cole, 1977.

Baltes, P. B. and Schaie, K. W. On the plasticity of intelligence in adulthood and old age: Where Horn and Donaldson fail. American Psychologist, 1976, 31, 720-725.

Barnett, C., Leiderman, P., Grostein, R., and Klaus, M. Neonatal separation: The maternal side of interactional deprivation. Pediatrics, 1970, 45, 197.

Barsch, R. H. The parent of the handicapped child. Springfield, Ill.: Charles C. Thomas, 1968.

Battle, C. U. Disruptions in the socializaiton of a young, severely handicapped child. Rehabilitation Literature, 1974, 35, 130-140.

Bayley, N. and Schaefer, E. S. Relationship between socioeconomic variables and behavior of mothers toward young children. Journal of Genetic Psychology, 1960, 96, 61-77.

Bell, N. W. and Vogel, E. F. Toward a framework for the functional analysis of family behavior. In N. W. Bell and E. F. Vogel (Eds.), A modern introduction to the family. New York: Free Press, 1968.

Bell, R. Q. A reinterpretation of the direction of effects in studies of socialization. Psychological Review, 1968, 75, 81-95.

Bell, R.Q. Stimulus control of parent or caretaker behavior by offspring. Developmental Psychology, 1971, 4, 63-72.

Bell, R.Q. Contributions of human infants to caregiving and social interaction. In M. Lewis and L.A. Rosenblum (Eds.), The effect of the infant on its caregiver. New York: John Wiley and Sons, 1974.

Benedek, T. Parenthood as a developmental phase: A contribution to the libido. Journal of the American Psychoanalytic Association, 1959, 7, 389-417.

Benedek, T. Parenthood during the life cycle. In E.J. Anthony and T. Benedek (Eds.), Parenthood: Its psychology and psychopathology. Boston: Little Brown and Company, 1970.

Bibring, G.L., Dwyer, T.F., Huntington, D.S., and Valenstein, A.F. A study of a psychological process in pregnancy and of the earliest mother-child relationship. Psychoanalytic Study of the Child, 1961, 16, 9-72.

Bjene, I., and Hansen, E. Psychomotor development and school adjustment of 7-year-old children with low birth weight. Acta Paediatrica Scandinavia, 1976, 65, 88-96.

Brent, S.B. Individual specialization, collective adaptation and rate of environmental change. Human Development, 1978, 21, 21-23.

Brim, O.G., Jr. Socialization throughout the life cycle. In O.G. Brim and S. Wheller (Eds.), Socialization after childhood: Two essays. New York: Wiley, 1966.

Bronfenbrenner, U. Socialization and social class through time and space. In E.E. Maccoby, R.M. Newcomb, and E.L. Hartley (Eds.), Readings in social psychology. New York: Holt, Rinehart and Winston, 1958.

Bronfenbrenner, U. Is early intervention effective? (DHEW Publication No. (OHD) 75-25). Washington, D.C.: U.S. Government Printing Office, 1974.

Buhler, C. Genetic aspects of the self. Annals of the New York Academy of Science, 1962, 96, 730-764.

Carey, W.B. Clinical applications of infant temperament measurements. Journal of Pediatrics, 1972, 81, 823-828.

Carver, J.N. and Carver, N.E. The family of the retarded child. Syracuse: Syracuse University Press, 1972.

Cattell, R.B. The scientific analysis of personality. Baltimore: Penguin Books, 1965.

Cattell, R.B. Personality and mood by questionnaire. San Francisco, California: Jossey-Bass Publishers, 1973.

Cattell, R.B. *Self-analysis form*. Champaign: Institute for Personality and Ability Testing, 1976.

Cattell, R.B., Eber, H.W., and Tatsuoka, M.M. *Handbook for the sixteen personality factor questionnaire*. Champaign: Institute for Personality and Ability Testing, 1970.

Cattell, R.B., Horn, J.L., Sweeney, A.B., and Radcliffe, J.A. *Motivation analysis testing*. Champaign, Illinois: Institute for Personality and Ability Testing, 1964.

Clarke-Stewart, K.A. Interactions between mothers and their young children: Characteristics and consequences. *Monographs of Society for Research in Child Development*, 1973, *38* (6-7, Serial No. 153).

Cohen, J. Some statistical issues in psychological research. In B. Wolman (Ed.), *Handbook of clinical psychology*. New York: McGraw-Hill, 1965.

Cohen, R.L. Pregnancy stress and maternal perceptions of infant endowment. *Journal of Mental Subnormality*, 1966, *12* (22), 18-23.

Cohler, B.J., Grunebaun, H.V., Weiss, J.L., Hartman, C.R., and Gallant, D.H. Child care attitudes and adaptation to the maternal role among mentally ill and well mothers. *American Journal of Orthopsychiatry*, 1976, *46*, 123-134.

Cohler, B., Weiss, J., and Grunebaum, H. Child-care attitudes and emotional disturbance among mothers of young children. *Genetic Psychology Monographs*, 1970, *82*, 3-47.

Cummings, S.T., Bayley, H.D., and Rie, H.E. Effects of the child's deficiency on the mother: A study of mothers of mentally retarded chronically ill, and neurotic children. *American Journal of Orthopsychiatry*, 1966, *36*, 595-608.

Daniels, L.L. and Berg, C.M. The crisis of birth and adaptive patterns of parents of amputee children. *Clinical Proceedings, Children's Hospital, Washington, D.C.*, 1968, *24*, 108-117.

D'Arcy, E. Congenital defects: Mothers' reaction to first information. *British Medical Journal*, 1968, *3*, 796-798.

Davids, A. A research design for studying maternal emotionality before childbirth and after social interaction with the child. *Merrill-Palmer Quarterly*, 1968, *14*, 345-354.

Davids, A., and Holden, R.H. Consistency of maternal attitude and personality from pregnancy to eight months following childbirth. *Developmental Psychology*, 1970, *2*, 364-366.

Davies, P.A., and Tizard, J.P.M. Very low birth weight and subsequent neurological defect. *Developmental Medicine and Child Neurology*, 1975, *17*, 3-17.

DiLeo, J. Physical factors in growth and development. New York: Teachers College Press, 1970.

Dusewicz, R.A. A scale for assessing knowledge of child development. Education, 1973, 93, 252-253.

Education of handicapped children, Federal Register, August 23, 1977, part II, 42.

Erickson, E. Childhood and society. New York: W.W. Norton & Co., Inc., 1963.

Erickson, M. MMPI comparisons between parents of young emotionally disturbed and organically retarded children. Journal of Counseling and Clinical Psychology, 1968, 32, 701-706.

Erickson, M. MMPI profiles of parents of young retarded children. American Journal of Mental Deficiency, 1969, 73, 728-732.

Farber, B. Effects of a severely mentally retarded child on family integration. Monographs of Society for Research in Child Development, 1959, 24 (2, Serial No. 71).

Farber, B. Perceptions of crisis and related variables in the impact of a retarded child on the mother. Journal of Health and Human Behavior, 1960, 1, 108-118.

Fein, R.A. Men's entrance to parenthood. The Family Coordinator, 1976, 25: 4, 341-348.

Flapen, M. A paradigm for the analysis of child-bearing motivations prior to the birth of the first child. American Journal of Orthopsychiatry, 1969, 39, 402-417.

Forrer, G.R. The mother of a defective child. Psychoanalytic Quarterly, 1959, 28 (1), 49-63.

Freud, S. An outline of psychoanalysis. London: Hogarth Press, 1964.

Games, P.A. Multiple comparisons of means. American Educational Research Journal, 1971, 8, 531-565.

Games, P.A. Computer programs for robust analyses in multifactor analysis of variance. Educational and Psychological Measurement, 1975, 35, 147-152.

Gardner, .R.A The guilt reaction of parents of children with severe physical disease. American Journal of Psychiatry, 1969, 126, 636-644.

Goldberg, S. Social competence in infancy: A model of parent-infant interaction. Merrill-Palmer Quarterly, 1977, 23: 3, 163-177.

Goodstein, L.D. MMPI differences between parents of children with cleft palates and parents of physically normal children. *Journal of Speech and Hearing Research*, 1960, *3*, 31-38.

Gorham, K.A., des Jardins, C., Page, R., Pettis, E., and Schieber, B. Effect on parents. In N. Hobbs (Ed.), *Issues in the classification of children*. San Francisco: Jossey-Bass Publishers, 1975.

Gould, R. The phases of adult life: A study in developmental psychology. *American Journal of Psychiatry*, 1972, *129*, 521-531.

Goulet, L.R., and Baltes, P.B. *Life-span developmental psychology: Research and theory*. New York: Academic Press, 1970.

Green, M. and Solnit, A.J. Reactions to the threatened loss of a child: A vulnerable child syndrome. *Pediatrics*, 1964, *34*, 58-66.

Greenberg, D.M. Parental reactions to an infant with a birth defect: A study of five families. Paper presented at the biennial meeting of the Society for Research in Child Development, San Francisco, March, 1979.

Grossman, F.K. *Brothers and sisters of retarded children: An exploratory study*. Syracuse: Syracuse University Press, 1972.

Gutmann, D. Parenthood: A key to the comparative study of the life cycle. In N. Datan and L.H. Ginsberg (Eds.), *Life-span developmental psychology: Normative life crises*. New York: Academic Press, 1975.

Hanson, M.J. *Teaching your Down's syndrome infant: A guide for parents*. Baltimore: University Park Press, 1977.

Havighurst, R.J. *Developmental tasks and education*. New York: David McKay, 1972.

Havighurst, R.J. History of developmental psychology: Socialization and personality development. In P.B. Baltes and K.W. Schaie (Eds.), *Life-span developmental psychology: Personality and socialization*. New York: Academic Press, 1973.

Hess, R.D. Social class and ethnic influences upon socialization. In P.H. Mussen (Ed.), *Carmichael's manual of child psychology* (3rd ed.). New York: John Wiley and Sons, Inc., 1970.

Hess, R.D. and Chipman, V.C. Early experience and the socialization of cognitive modes in children. Child Development, 1965, *34*, 869-886.

Hewett, S. *The family and the handicapped child: A study of cerebral palsied children in their homes*. Chicago: Aldine Publishing Co., 1970.

Hill, R. and Aldous, J. Socialization for marriage and parenthood. In D.A. Goslin (Ed.), Handbook of socialization theory and research. Chicago: Rand McNally and Co., 1969.

Hobbs, D.F. Parenthood as crisis: A third study. Journal of Marriage and the Family, 1965, 27, 367-372.

Hobbs, D.F. Transition to parenthood: A replication and an extension. Journal of Marriage and the Family, 1968, 30, 413-417.

Hobbs, D.F. and Cole, S.P. Transition to parenthood: A decade replication. Journal of Marriage and the Family, 1976, 38, 723-731.

Hosack, A.M. A comparison of crisis: Mother's early experiences with normal and abnormal first-born infants. Unpublished doctoral dissertation, Harvard University, 1968.

Howard, J. The influence of children's developmental dysfunctions on marital quality and family interaction. In R.M. Lerner and G.B. Spanier (Eds.), Child influences on marital and family interaction: A life span perspective. New York: Academic Press, 1978.

Hultsch, D.F. and Plemons, J.K. Life events and life-span development. In P.B. Baltes and O.G. Brim, Jr. (Eds.), Life-span development and behavior (Vol. 2), New York: Academic Press, in press.

Jensen, G.D. and Kogan, K.L. Parental estimates of the future achievement of children with cerebral palsy. Journal of Mental Deficiency Research, 1962, 6, 56-64.

Jung, C.G. Conscious, unconscious and individuation. Princeton: Princeton University Press, 1959.

Kamii, C.K. and Radin N.L. Class differences in the socialization practices of Negro mothers. Journal of Marriage and the Family, 1967, 29, 302-310.

Kennedy, J.F. Implications of grief and mourning for mothers of defective infants (Doctoral dissertation, Smith College School for Social Work, 1969). Dissertation Abstracts International, 1970, 31, 472A-473A. (University Microfilms No. 7-11498).

Klaus, M.H. and Kennell, J.H. Mothers separated from their newborn infants. Pediatric Clinics of North America, 1970, 17, 1015-1037.

Klaus, M.H. and Kennell, J.H. Mother-infant bonding. Saint Louis: Saint Louis: C.V. Mosby Company, 1976.

Krause, F.J. and Meyer, A.L. Preface, In T.D. Tjossem (Ed.), Intervention strategies for use with high-risk infants and young children. Baltimore, Md.: University Park Press, 1976.

Krug, S.E., Scheiser, I.H. and Cattell, R.B. Handbook for the IPAT Anxiety Scale. Champaign: Institute for Personality and Ability Testing, 1976.

LeMasters, E.E. Parenthood as crisis. *Marriage and Family Living*, 1957, *19*: 4, 352-255.

Lerner, R.M. Nature, nurture, and dynamic interactionism. *Human Development*, 1978, *21*, 1-20.

Lerner, R.M. and Ryff, C.D. Implementation of the life-span view of human development: The sample case of attachment. In P.B. Baltes (Ed.), *Life-span development and behavior* (Vol. 1). New York: Academic Press, 1978.

Lerner, R.M. and Spanier, G.B. *Adolescent development: A life-span perspective*. New York: McGraw Hill, (in press).

Levinson, D.J. *The seasons of a man's life*. New York: Alfred A. Knopf, 1978.

Lewis, M and Rosenblum, L.A. *The effect of the infant on its caregiver*. New York: Wiley and Sons, 1974.

LMAT. Champaign: Institute for Personality and Ability Testing, 1975.

Mason, E.A. A method of predicting crisis outcome for mothers of premature babies. *Public Health Report*, 1963, *78*, 1031-1035.

McAllister, R.J., Butler, E.W. and Lei, T.J. Patterns of social interaction among families of behaviorally retarded children. *Journal of Marriage and the Family*, 1973, *35*, 93-100.

McMichael, J.K. *Handicap: A study of physically handicapped children and their families*. Pittsburgh: University of Pittsburgh Press, 1972.

Mercer, R.T. Mothers' responses to their infants with defects. Nursing Research, 1974, *23*: 2, 133-137. (a)

Mercer, R.T. Responses of five multigravidge to the event of the birth of an infant with a defect (Doctoral dissertation, University of Pittsburgh, 1973). *Dissertation Abstracts International*, 1974, *34*, 5050B-5041B. (University Microfilms No. 74-08695) (b).

Meyer, A. The life chart and the obligation of specifying positive data in psychopathological diagnosis. In E.E. Winters (Ed.), *The collected papers of Adolf Meyer* (Vol. 3). Baltimore: John Hopkins Press, 1951.

Mussen, P.H., Conger, J.J. and Kagan, J. *Child development and personality* (4th ed.). New York: Harper and Row, 1974.

Neugarten, B. Adult personality: A developmental point of view. *Human Development*, 1966, *9*, 61-73.

Olshansky, S. Chronic sorrow: A response to having a mentally defective child. *Social Casework*, 1962, *43*, 190-193.

Pepper, S.C. World Hypotheses. Berkeley: University of California Press, 1942.

Prechtl, H.F.R. The mother-child interaction in babies with minimal brain dysfunction (a follow-up study). In B.M. Foss (Ed.), Determinants of infant behavior II. New York: Wiley, 1963.

Richardson, S.A. The effect of physical disability on the socialization of a child. In D.A. Goslin (Ed.), Handbook of socialization theory and research. Chicago: Rand McNally and Co., 1969.

Richardson, S.A. Patterns of medical and social research in pediatrics. Acta Paediatrica Scandinavia, 1970, 59, 265-272.

Riegel, K.F. Toward a dialectical theory of development. Human Development, 1975, 18, 50-64.

Robson, K.S. and Moss, H.A. Patterns and determinants of maternal attachment. Journal of Pediatrics, 1970, 77, 976-985.

Rodgers, R. Family interaction and transaction: The developmental approach. Englewood Cliffs, NJ: Prentice-Hall, 1973.

Rollins, B.C. and Galligan, R. The developing child and marital satisfaction of parents. In R.M. Lerner and G.B. Spanier (Eds.), Child influences on marital and family interaction: A life span perspective. New York: Academic Press, 1978.

Rose, J.A. The prevention of mothering breakdown associated with physical abnormalities in the infant. In G. Caplan (Ed.), Prevention of mental disorders in children. New York: Basic Books, 1961.

Rose, J., Boggs, T.R., Adlerstein, A., Trigos, W., Rigg, I., and Crowther, P. The evidence for a syndrome of "mothering disability" consequent to threats to survival of neonates: A design for hypothesis testing including prevention in a prospective study. American Journal of Diseases of Children, 1960, 100, 776.

Ross, A.O. The exceptional child in the family. New York: Grune and Stratton, 1964.

Rossi, A.S. Transition to parenthood. Journal of Marriage and Family Living, 1968, 30, 26-39.

Russell, S. Transition to parenthood: Problems and gratifications. Journal of Marriage and the Family, 1974, 36, 294-302.

Ryckman, D.B. and Henderson, R.A. The meaning of a retarded child for his parents: A focus for counselors. Mental Retardation, 1965, 3: 4, 4-7.

Sameroff, A.J. and Chandler, M.J. Reproductive risk and the continuum of caretaking casualty. In F.D. Horowitz (Ed.), Review of Child Development Research (Vol. 4), Chicago: University of Chicago Press, 1975.

Satterthwaite, F.E. An approximate distribution of estimates of variance components. Biometrics Bulletin, 1946, 2, 110-114.

Sears, R.R. Sources of life satisfactions of the Terman gifted men. American Psychologist, 1977, 32, 119-128.

Seashore, M.J., Leifer, A.D., Barnett, C.R., and Leiderman, P.H. The effects of denial of early mother-infant interaction on maternal self-confidence. Journal of Personality and Social Psychology, 1973, 26: 3, 369-378.

Self, P.A. The further evolution of the parental imperative. In N. Datan and L.H. Ginsberg (Eds.), Life-span developmental psychology: Normative life crises. New York: Academic Press, 1975.

Solnit, A.J. and Stark, M. Mourning and the birth of the defective child. Psychoanalytic Study of the Child, 1961, 16, 523-537.

Spanier, G.B., Sauer, W., and Larzelere, R. Family development and the family life cycle: An empirical evaluation. Paper presented in the Theory and Methodology Workshop, National Council on Family Relations, San Diego, October, 1977.

Susser, M.W. and Watson, W. Sociology in medicine. London: Oxford University Press, 1971.

Terman, L.M. and Olden, M.H. The gifted group at mid-life; thirty-five years' follow-up of the superior child (Vol. 5, Genetic studies of genius). Stanford: Stanford University Press, 1954.

Thomas, A., Chess, S. and Birch, H.G. The origins of personality. Scientific American, 1970, 223: 2, 102-109.

Thomas, A., Chess, S., Birch, H.G., Hertzig, M.E., and Korn, S. Behavioral individuality in early childhood. New York: New York University Press, 1963.

Tizard, J. and Grad, J.C. The mentally handicapped and their families. London: Oxford University Press, 1961.

Tjossem, T.D. (Ed.) Intervention strategies for high-risk infants and young children. Baltimore, Md.: University Park Press, 1976.

Veevers, J.E. The social meanings of parenthood. Psychiatry, 1973, 36: 3, 291-310.

Verma, S. A study of the relationship between day care teachers' beliefs and practices. Unpublished master's thesis, The Pennsylvania State University, 1973.

Voysey, M. Impression management by parents with disabled children. Journal of Health and Social Behavior, 1972, 13, 80-89.

Weinraub, M., Brooks, J., and Lewis, M. The social network: A reconsideration of the concept of attachment. Human Development, 1977, 20, 31-47.

Welds, K. Voluntary childlessness in professional women. Unpublished doctoral dissertation, Harvard University, 1976.

Werner, H. The concept of development from a comparative and organismic point of view. In D.B. Harris (Ed.), The concept of development. Minneapolis: University of Minnesota Press, 1957.

Yarrow, L.J. and Goodwin, M.S. Some conceptual issues in the study of mother-child interaction. American Journal of Orthopsychiatry, 1965, 35, 473-481.

APPENDIX A

Measures

I. Self Analysis Form
II. LMAT
III. Parent Beliefs
IV. Knowledge of Infant Development
V. Parental Expectations

Pages 143-151 contain copyrighted material and is not available for reproducation. "Self Analysis Form" (1976 Edition) is copyrighted by R.B. Cattell. Published by Institute for Personality and Ability Testing, 1602-04 Coronado Drive, Champaign, IL 61820. (Catalog No. CA 166)

1976 Edition

SELF ANALYSIS FORM

NAME__________________________________**TODAY'S DATE**____________
First Middle Last

SEX__________ **AGE**________ **OTHER FACTS**______________________
(Write M or F) (Nearest Year) (Address, Occupation, etc., as instructed)

CONFIDENTIAL

Inside this booklet there are forty statements about how most people feel or think at one time or another. There are no right or wrong answers. Just pick the one that is really true for you, and mark the a, b, or c answer.

You'll start with the two simple examples below, for practice. Read the first sentence and then put an X in the box that tells how you feel about walking. If you enjoy walking, you would put an X in the **a** box. If you don't, you'd mark the **c** box. If you enjoy walking once in a while, you'd mark the middle box. But mark the middle box *only* if it is impossible for you to decide definitely **yes** or **no**. But don't use it unless you absolutely have to.

	a	b	c
1. I enjoy walking. **[a] yes, [b] sometimes, [c] no.**	☐	☐	☐

Now do the second example.

	a	b	c
2. I would rather spend an evening: **[a] talking to people, [b] uncertain, [c] at a movie.**	☐	☐	☐

Now:

1. **Make sure you have put your name, and whatever else the examiner asks, at the top of this page.**
2. **Please answer every statement. Don't skip a single one. Your answers will be entirely confidential.**
3. **Remember, use the middle box only if you cannot possibly decide on a or c.**
4. **Don't spend time thinking over the statement. Just mark your answer quickly, according to how you feel about it *now*.**

It will take only ten minutes or so to finish. Hand in the booklet when you're through, unless told to do otherwise. As soon as you're told to, turn the page and begin.

STOP HERE—WAIT FOR SIGNAL

Copyright © 1957, 1976, by R. B. Cattell. All rights reserved. Printed in U.S.A. Published by the Institute for Personality and Ability Testing, 1602-04 Coronado Drive, Champaign, Illinois. Catalog No. CA 166

pulled from E F copy.

Form A

LMAT

The purpose of this test is to let people tell something about their own thoughts and interests.

There are two sections in this booklet. Each begins with instructions and examples, which you'll go through before starting.

Do *not* mark your answers in this booklet. Instead, mark them on the answer sheet.

USES (Section I)

Instructions: First, fill in your name and other information on your answer sheet. Then find the section titled USES.

In this section you're asked what seems to you to be the better use to make of a certain amount of time, money, etc., under given circumstances. For example:

I. If I had all the money I needed, I'd use it better by:

☐ just enjoying myself
☐ studying in another country

To the person whose answers are marked on your sheet, you'll notice that studying in another country seemed better.

Remember *not* to mark your answers in the booklet. Mark them on the answer sheet in the section labeled USES. Fill in the upper or lower box, whichever corresponds to the answer you choose.

Work quickly and mark each answer freely and frankly, according to what *YOU* think. Sometimes it might be hard to choose between the two answers, but always *choose one* (and *only* one). If you have any questions, please ask them now. You may start as soon as you're told.

DO NOT WRITE IN THIS BOOKLET

1975 EDITION

Copyright 1961, 1975, by the Institute for Personality and Ability Testing, 1602-04 Coronado Drive, Champaign, Illinois. All rights reserved. Printed in U.S.A. Not to be translated or reproduced in whole or in part, stored in a retrieval system, or transmitted in any form or by any means, photocopying, mechanical, electronic, recording, or otherwise, without prior permission in writing from the publisher.

Session# ________ ID# ________________

In this questionnaire you are asked to read a statement and then decide if you agree or disagree with it. If you strongly agree with the statement, circle Strongly Agree. If you strongly disagree, then circle Strongly Disagree. If you moderately agree with the statement, circle Moderately Agree. If you moderately disagree with the statement, circle Moderately Disagree. If you slightly agree, circle Slightly Agree. If you slightly disagree, circle Slightly Disagree.

1. A parent should allow a child to leave an activity without finishing it.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

2. A child's own interest in an activity is a reward; a parent need not provide other rewards.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

3. How children work and play is more important than what they produce.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

4. Children should follow parents directions for an activity.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

5. Parents should require that children complete each task that they start.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

6. Parents' explanations are a child's main source of information.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

7. A child should be permitted to use toys and any household things in any safe way rather than just they way they were designed.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

8. A parent should provide situations in which the child can explore and solve problems.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

9. A parent should stress that a child use toys in the way they were designed.

   Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

10. Parents should begin a child's activities.

    Strongly Agree   Moderately Agree   Slightly Agree   Slightly Disagree   Moderately Disagree   Strongly Disagree

Session# ______ ID# ____________________

These statements are about children and how they behave. For each statement, you are asked if you agree or disagree with the statement. If you agree with the statement, circle Agree. If you disagree with the statement, circle Disagree. If you are not sure whether you agree or disagree, circle Not sure.

1. Self-concept is the way one thinks and feels about one's self.

   Agree Disagree Not sure

2. Other children who are about the same age as the child are called peers.

   Agree Disagree Not sure

3. Children who have average or above-average intelligence will never have emotional problems that prevent them from learning and from being successful in school.

   Agree Disagree Not sure

4. A child does not need to explore and experiment in order to learn.

   Agree . Disagree Not sure

5. Readiness means having a strong desire to do something.

   Agree Disagree Not sure

6. Down's Syndrome means the same thing as mongolism.

   Agree Disagree Not sure

7. A child's brothers and sisters are called siblings.

   Agree Disagree Not sure

8. Hitting and fighting and pushing others around are examples of agressive behavior.

   Agree Disagree Not sure

9. Children's self-concepts determine, to a large extent, how they behave and how able they are to learn.

   Agree Disagree Not sure

10. A child needs opportunities to play and do things with other children of the same age.

   Agree Disagree Not sure

11. Children's play seems to be only a way of having fun, with children not learning too many things through their play.

Agree Disagree Not sure

12. Discipline means punishing a child when doing something wrong.

Agree Disagree Not sure

13. The level of functioning of the mentally retarded child cannot be improved.

Agree Disagree Not sure

14. Frustration means not being able to do something or get something that you want or need.

Agree Disagree Not sure

15. It can be damaging to label a child as naughty or lazy or stupid.

Agree Disagree Not sure

16. What happens before a child is born doesn't have any effects, good or bad, on the child's development.

Agree Disagree Not sure

17. Motivation means knowing what you should do and doing it.

Agree Disagree Not sure

18. Most mentally retarded children look the same as normal children.

Agree Disagree Not sure

19. Children's cognitive abilities determine how happy or sad or relaxed or afraid they will be.

Agree Disagree Not sure

20. Achievement refers to how well a child does a given task.

Agree Disagree Not sure

21. When children are mentally retarded they are also emotionally distrubed.

Agree Disagree Not sure

22. Preschool children have a highly developed capacity for abstract thinking.

Agree Disagree Not sure

23. A child's attention span is the time it takes the child to solve a problem.

Agree Disagree Not sure

24. It is always possible to tell how children feel by the expression on their faces.

Agree Disagree Not sure

25. It is normal for children two years old and under to be close together but to play separately.

Agree Disagree Not sure

26. Parents should not be involved in a child's preschool or school experience. Such experience is strictly an educational matter that does not concern the parents.

Agree Disagree Not sure

27. A birth defect is like a birth mark and will often go away if left alone.

Agree Disagree Not sure

28. A young child typically doesn't really know how long five minutes or an hour is or the difference between tomorrow and next month.

Agree Disagree Not sure

29. A stimulus is something that helps keep the child awake and alert.

Agree Disagree Not sure

30. Sensory stimulation means providing things for a child to see and hear and feel and smell and taste.

Agree Disagree Not sure

31. An example of eye-hand coordination is seeing that a square looks different from a circle or triangle.

Agree Disagree Not sure

32. An example of visual discrimination is being able to put beads on a string.

Agree Disagree Not sure

33. Children with IQ's below 85 should not be in regular classrooms.

Agree Disagree Not sure

34. Early education is harmful to the development of the slow child because the child will outgrow some or all of the delays.

Agree Disagree Not sure

35. Children need to be successful to develop confidence in their ability to do things.

Agree Disagree Not sure

36. Children may misbehave in order to get attention that they cannot get any other way.

Agree Disagree Not sure

37. The handicapped child should not play with non-handicapped children because it will just be frustrating.

Agree Disagree Not sure

38. Adults should never deliberately embarrass or ridicule a child.

Agree Disagree Not sure

39. Children need to have adults show that they like them and enjoy them.

Agree Disagree Not sure

40. To be consistent in handling children means to react about the same way each time they do something wrong instead of scolding sometimes and laughing other times.

Agree Disagree Not sure

41. Being in good health means just not being sick.

Agree Disagree Not sure

42. A contagious disease is one that you get from another person who has that disease.

Agree Disagree Not sure

43. Frowning, smiling, and shrugging your shoulders are examples of non-verbal communication.

Agree Disagree Not sure

44. Motor skills are the skills that involve using muscles.

Agree Disagree Not sure

45. In general, it is better to tell children what they should not do rather than what they should do.

Agree Disagree Not sure

46. Young children should have toys and materials that they can do many different things with rather than those they just watch.

Agree Disagree Not sure

Session# _____ ID# __________________

The following questions are about your hopes for your child's future. You probably have not thought about many of these things before, and some of the questions may be difficult to answer. A number of the questions refer to the future, but we would like to have your ideas as they seem to you now.

Each of the questions should be answered either yes or no. If the answer is yes, circle YES; if the answer is no, circle NO.

YES NO 1. Do you think your child will go on dates when a teenager?

YES NO 2. Do you think your child will, when an adult, obtain a driver's license and drive a car?

YES NO 3. Do you think your child will require care in an institution some day?

YES NO 4. Do you think your child will learn to read a newspaper?

YES NO 5. Do you think your child will receive assistance to buy own clothes in adulthood?

YES NO 6. Do you think your child has above average physical ability?

YES NO 7. Do you think your child has normal mental ability?

YES NO 8. Do you think your child will have a regular job and be self-supporting when an adult?

YES NO 9. Do you think your child will become a professional athlete?

YES NO 10. Do you think your child will require assistance to sign own name?

YES NO 11. Do you think your child will attend a special class for slow learners when school age?

YES NO 12. Do you think your child will earn a greater income than yours when an adult?

YES NO 13. Do you think your child will participate in some regular sports activity?

YES NO 14. Do you think your child will eventually finish more schooling than you have?

YES NO 15. Do you think your child will be the most popular kid in school?

YES NO 16. Do you think your child will be responsible for the welfare of many others when an adult?

YES NO 17. Do you think your child will receive an advanced degree and become a professional, for example, a doctor or lawyer.

YES NO 18. Do you think your child will play mostly by himself when older?

YES NO 19. Do you think your child has below normal mental ability?

YES NO 20. Do you think your child will always be limited by any handicaps?

YES NO 21. Do you think your child will graduate from high school?

YES NO 22. Do you think your child will marry and have children when an adult?

YES NO 23. Do you think your child will have income from a subsidized program, for example, a sheltered workshop, disability pay, when an adult?

YES NO 24. Do you think your child has average physical ability?

YES NO 25. Do you think your child will need assistance to manage own family when an adult?

YES NO 26. Do you think your child will attend a regular school?

YES NO 27. Do you think your child will write a book some day?

YES NO 28. Do you think your child has poor physical abilities?

YES NO 29. Do you think your child will be a model husband and father/mother and wife?

YES NO 30. Do you think your child has above average mental ability?

APPENDIX B

Explanations to Subjects

I. Informed Consent Form - Temple University Hospital
II. Letters to Parents for Study Two
III. Informed Consent Form - Pennsylvania State University
IV. Informed Consent Form - St. Christopher's Hospital

Temple University Hospital

Department of Obstetrics and Gynecology

INFORMED CONSENT FORM

Title of Investigation: Parental Development in First-time Mothers.

Investigators: Nancy Ann Busch, Doctoral Candidate,
The Pennsylvania State University

Dr. Michael J. Daly, Professor and Chairman

This is to certify that I, ______________________, hereby agree to participate in a scientific study as an authorized part of the educational and research program of Temple University Hospital under the supervision of Dr. Michael J. Daly.

The study and my part in the investigation have been defined and fully explained to me by ____________________ and I understand his/her explanation. The procedures are described on the back of this form and have been discussed in detail with me.

I have been given an opportunity to ask whatever questions I may have had, and all such questions have been answered to my satisfaction.

I understand that I am free not to answer any specific test items or questions on the questionnaires.

I understand that any data or answers to questions will remain confidential with regard to my identity.

I FURTHER UNDERSTAND THAT I AM FREE TO WITHDRAW MY CONSENT AND TERMINATE MY PARTICIPATION AT ANY TIME.

____________ date ____________________________ Volunteer's signature

I, the undersigned, have defined and fully explained the investigation to the above subject.

____________ date ____________________________ Investigator's signature

PARENTAL DEVELOPMENT IN FIRST-TIME MOTHERS

Explanation of Study

Our purpose is to study changes which occur when people have children. These might include changes in interests, beliefs, or knowledge. By understanding the changes which occur, we hope to be able to design parent education programs that are more helpful to new parents. We would like you to help us by completing some questionnaires. This will take approximately 1 hour of your time. All of the information you give us will remain confidential; we will only use it for our research purposes. The only identification on the answer sheet will be a number which allows us to match answers from one session to your answers at the next session so that we can see if your answers change. Although not everyone will take part in additional sessions, some women will complete the questionnaires 3 more times(for a total of 4 times). The first additional session will take place while you are still in the maternity ward after your baby's birth. The other two follow-up sessions will take place when your baby is about 5-6 weeks old and 10-12 weeks old in the pediatric clinic. We will contact you later about a specific time for these last two sessions. You will be paid $10 for this first session. If you do take part in additional sessions, you will be paid $10 for each session after this, for a total of $40.

The study also requires information about the health of your baby at birth and in the following three months. We will obtain this information from the medical records.

______________	______________________
date	Volunteer's signature
______________	______________________
date	Investigator's signature

I hereby give my permission for the investigators to use the above information from the medical records for the purposes of this research study only.

______________	______________________
date	Volunteer's signature

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF HUMAN DEVELOPMENT
UNIVERSITY PARK, PENNSYLVANIA 16802

Division of Individual and Family Studies
S-110 Henderson Human Development Building

Area Code
865-1447

I am a Ph.D. student in child development and am currently doing my doctoral dissertation. To complete the project, I need to find mothers of very young children. Dr. Tyrala of St. Christopher's Hospital gave me your name and suggested that I contact you.

I am studying the adjustments which women make when they become mothers. These adjustments might include changes in interests, beliefs, or knowledge. To look at these changes, I need the help of mothers like yourself. I would like you to help by completing some questionnaires once a month for three months. This will take approximately one hour of your time each month. You will be paid $3 for completing each set of questionnaires for a total of $9.

I will call you in a few days to tell you more about the study. I would very much appreciate your help. Thank you.

Sincerely,

Nancy Ann Busch
Researcher

Endorsement: Donald L. Peters, Ph.D.
Associate Professor of
Human Development

NAB:nb

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF HUMAN DEVELOPMENT
UNIVERSITY PARK, PENNSYLVANIA 16802

Division of Individual and Family Studies
S-110 Human Development Building

Area Code 814
865-1447

I am a Ph.D. student in child development and am currently doing my doctoral dissertation. To complete the project, I need to find mothers of very young children. Dr. Robert Meny of Raritan Valley Hospital gave me your name and suggested that I contact you.

I am studying the adjustments which women make when they become mothers. These adjustments might include changes in interests, beliefs, or knowledge. To look at these changes, I need the help of mothers like yourself. I would like you to help by completing some questionnaires once a month for three months. This will take approximately one hour of your time each month. You will be paid $3 for completing each set of questionnaires for a total of $9.

I will call you in a few days to tell you more about the study. I would very much appreciate your help. Thank you.

Sincerely,

Nancy Ann Busch
Researcher

Endorsement: Donald L. Peters, Ph.D.
Associate Professor of
Human Development

AN EQUAL OPPORTUNITY UNIVERSITY

The Pennsylvania State University

INFORMED CONSENT FORM

Title of Investigation: Parental Development in First-time Mothers

Investigators: Nancy Ann Busch, Doctoral Candidate
Dr. Donald L. Peters, Associate Professor

This is to certify that I, ____________________, hereby agree to participate in a scientific study as an authorized part of the educational and research program of the Pennsylvania State University under the supervision of Dr. Donald L. Peters.

The study and my part in the investigation have been defined and fully explained to me by ________________________ and I understand his/her explanation. The procedures are described on the back of this form and have been discussed in detail with me.

I have been given an opportunity to ask whatever questions I may have had, and all such questions have been answered to my satisfaction.

I understand that I am free not to answer any specific test items or questions on the questionnaire.

I understand that any data or answers to questions will remain confidential with regard to my identity.

I FURTHER UNDERSTAND THAT I AM FREE TO WITHDRAW MY CONSENT AND TERMINATE MY PARTICIPATION AT ANY TIME.

____________	________________________________
date	Subject's Signature

I, the undersigned, have defined and fully explained the investigation to the above subject.

____________	________________________________
date	Investigator's Signature

Explanation of Study

Our purpose is to study changes which occur when people have children. These might include changes in interests, beliefs, or knowledge. By understanding the changes which occur, we hope to be able to design parent education programs that are more helpful to new parents. We would like you to help us by completing some questionnaires. This will take approximately one hour of your time. All of the information you give us will remain confidential; we will only use it for our research purposes. The only identification on the answer sheet will be a number which allows us to match your answers from one session to your answers at the next session so that we can see if your answers changed.

ST. CHRISTOPHER'S HOSPITAL FOR CHILDREN
5th and Lehigh Avenue, Philadelphia, Pennsylvania 19133

Medical Genetics
Cytogenetic Laboratory
Hope H. Punnett, Ph.D.
Mildred L. Kistenmacher, M.D.

(215) 427-5389
427-5291

INFORMED CONSENT FORM

Title of Investigation: Parental Development in First-time Mothers

Investigators: Nancy Ann Busch, Doctoral Candidate, Pennsylvania State University
Mildred L. Kistenmacher, M. D., Supervisor

This is to certify that I, ________________________________, hereby agree to participate in scientific study as an authorized part of the educational and research program of St. Christopher's Hospital under the supervision of Dr. Mildred L. Kistenmacher.

The study and my part in the investigation have been defined and fully explained to me by ____________________________ and I understand his/her explanation. The procedures are described on the back of this form and have been discussed in detail with me.

I have been given an opportunity to ask whatever questions I may have had, and all such questions have been answered to my satisfaction.

I understand that I am free not to answer any specific questions on the questionnaires.

I understand that any data or answers to questions will remain confidential with regard to my identity.

I FURTHER UNDERSTAND THAT I AM FREE TO WITHDRAW MY CONSENT AND TERMINATE MY PARTICIPATION AT ANY TIME.

____________________ date
____________________ Volunteer's signature

____________________ date
____________________ Investigator's signature

A nonprofit, nonsectarian medical center for children
A major teaching affiliate of Temple University School of Medicine

PARENTAL DEVELOPMENT IN FIRST-TIME MOTHERS

Explanation of Study

Our purpose is to study changes which occur when people have children. These might include changes in interests, beliefs, or knowledge. By understanding the changes which occur, we hope to be able to design parent education programs that are more helpful to new parents. We would like you to help us by completing some questionnaires once a month for three months. This will take approximately one hour of your time each month. You will be paid $3 for completing each set of questionnaires for a total of $9. All of the information you give us will remain confidential; we will only use it for our research purposes. The only identification on the answer will be a number which allows us to match answers from one session to your answers at the next session so that we can see if your answers changed. The study also requires information about the health of your baby at birth and in the first half year of life. We will obtain this information from the medical records.

APPENDIX C

Handicaps and Risk Classification

I. Risk Categories - Study One
II. Handicaps and Risk Categories - Study Two

Risk Categories - Study One

4	Infections (requiring antibiotics)
3	Premature
2	ABO incompatibility - baby transfused
1	Club foot
1	Congenital heart problem, respiratory distress syndome, and infections
1	Imperforated anus
1	Multiple anomalies (not followed)
1	Stillborn (not followed)
14	Total

Handicaps and Risk Categories - Study Two

Handicaps

5	(5)	Down's Sundrome
4	(1)	Multiple anomalies (including pneumothorax, trachealesophageal fistula, duodenal atresia, imperforated anus
1	(1)	CNS hemorrhage and hyalinemembrane disease
1	(1)	Congenital heart defect
1	(0)	Hydrocephalus
1	(1)	Meningomyelocele
1	(1)	Seizures and fractured skull
14	(10)	Total

Risk Categories

33	(28)	More than one month premature and/or small-for-dates (including respiratory distress syndrome)
3	(3)	Infections (including meningitis)
1	(1)	Seizure (controlled)
37	(22)	Total

Note: Number in parentheses indicates mothers who completed more than one testing session.

APPENDIX D

Mean Scores of Subjects

Table 17. Mean Scores of Mothers at First Session - Study One
Table 18. Mean Scores of Six Matched Pairs - Study One
Table 19. Mean Scores of 35 Matched Pairs - Study Two
Table 20. Mean Scores of Mothers of Handicapped and Normal Children - Study Two
Table 21. Mean Scores of Mothers of At-Risk and Normal Children - Study Two
Table 22. Summary of Analyses for Effect of Repeated Testing - Study Two
Table 23. Mean Scores of Low- and Middle-SES Mothers

TABLE 17.

Mean Scores of Mothers at First Session - Study One

	Mothers of Normal Children-Not Followed (N=81)	Mothers of At-Risk Children (N-14)	Mothers of Normal Children (N=20)
Anxiety	$\bar{X}$ = 36.34 S.D. = 11.27	$\bar{X}$ = 33.64 S.D. = 16.39	$\bar{X}$ = 35.00 S.D. = 12.04
Career Sentiment	$\bar{X}$ = 10.56 S.D. = 2.21	$\bar{X}$ = 10.00 S.D. = 2.25	$\bar{X}$ = 11.47 S.D. = 1.87
Home-Parental Sentiment	$\bar{X}$ = 9.20 S.D. = 1.80	$\bar{X}$ = 9.29 S.D. = 3.75	$\bar{X}$ = 9.32 S.D. = 1.77
Superego	$\bar{X}$ = 20.46 S.D. = 2.84	$\bar{X}$ = 19.93 S.D. = 1.98	$\bar{X}$ = 19.89 S.D. = 3.02
Self-Sentiment	$\bar{X}$ = 22.16 S.D. = 3.21	$\bar{X}$ = 24.43 S.D. = 3.01	$\bar{X}$ = 22.11 S.D. = 2.79
Sweetheart-Spouse Sentiment	$\bar{X}$ = 6.74 S.D. = 1.70	$\bar{X}$ = 6.06 S.D. = 1.12	$\bar{X}$ = 7.00 S.D. = 1.91
Expectations	$\bar{X}$ = 24.66 S.D. = 3.91	$\bar{X}$ = 25.14 S.D. = 2.54	$\bar{X}$ = 25.45 S.D. = 2.58
Developmental Beliefs	$\bar{X}$ = 13.82 S.D. = 4.32	$\bar{X}$ = 16.57 S.D. = 3.98	$\bar{X}$ = 13.35 S.D. = 4.27
Operant Beliefs	$\bar{X}$ = 18.38 S.D. = 4.38	$\bar{X}$ = 17.36 S.D. = 5.36	$\bar{X}$ = 17.70 S.D. = 5.19
Knowledge	$\bar{X}$ = 23.79 S.D. = 6.26	$\bar{X}$ = 26.64 S.D. = 6.37	$\bar{X}$ = 25.75 S.D. = 7.77

TABLE 18

Mean Scores of Six Matched Pairs - Study One

	Mothers of At-Risk Children		Mothers of Normal Children	
	Mean	S.D.	Mean	S.D.
Anxiety				
Time 1	28.67	13.97	42.33	8.71
Time 2	29.50	12.13	41.00	7.10
Time 3	31.33	12.67	37.83	10.18
Time 4	33.17	11.57	41.00	6.19
Self-Sentiment				
Time 1	24.33	3.93	22.83	3.43
Time 2	25.67	1.37	22.83	3.65
Time 3	25.33	3.44	23.50	2.41
Time 4	23.17	3.43	22.17	5.12
Expectations				
Time 1	26.17	1.47	25.67	2.80
Time 2	26.17	1.83	25.33	2.42
Time 4	27.00	2.00	21.33	10.82

TABLE 19

Mean Scores of 35 Matched Pairs - Study Two

	Mothers of At-Risk & Handicapped Children		Mothers of Normal Children	
	Mean	S.D.	Mean	S.D.
Anxiety				
Time 1	31.51	11.73	31.83	10.57
Time 2	29.11	11.72	31.06	11.48
Time 3	29.23	12.99	31.51	12.50
Career Sentiment				
Time 1	9.14	1.80	9.80	2.06
Time 2	9.23	2.13	9.43	2.20
Time 3	9.86	2.25	9.60	2.12
Home-Parental Sentiment				
Time 1	10.00	2.30	9.94	1.75
Time 2	10.14	2.37	10.63	1.97
Time 3	10.57	2.15	10.29	2.35
Superego				
Time 1	18.63	2.90	19.06	2.45
Time 2	18.89	2.69	19.77	2.68
Time 3	19.26	2.45	19.28	2.87
Self-Sentiment				
Time 1	22.89	3.40	21.63	3.33
Time 2	22.40	3.15	21.74	3.74
Time 3	21.34	3.19	21.49	3.74
Sweetheart-Spouse Sentiment				
Time 1	8.54	1.65	8.51	1.63
Time 2	8.00	1.46	8.71	1.76
Time 3	8.31	1.37	8.57	1.61
Expectations				
Time 1	22.54	6.37	25.03	2.12
Time 3	23.43	6.76	25.31	2.41
Developmental Beliefs				
Time 1	17.51	4.13	18.17	3.10
Time 3	18.20	4.16	18.71	3.31
Operant Beliefs				
Time 1	14.086	4.78	12.94	4.07
Time 3	14.11	4.72	11.91	4.06
Knowledge				
Time 1	34.29	5.90	35.46	6.46
Time 3	35.14	6.00	36.63	6.32

TABLE 20

Mean Scores of Mothers of Handicapped and Normal Children - Study Two

	Mothers of Handicapped Children		Mothers of Normal Children	
	Mean	S.D.	Mean	S.D.
Anxiety				
Time 1	30.00	14.64	29.43	13.44
Time 2	29.00	14.55	32.00	17.51
Time 3	30.29	14.51	31.00	16.68
Career Sentiment				
Time 1	9.43	2.82	9.00	1.41
Time 2	9.14	2.19	8.14	1.68
Time 3	10.86	2.61	7.71	2.29
Home-Parental Sentiment				
Time 1	10.43	1.51	9.71	2.43
Time 2	10.29	2.43	10.14	2.73
Time 3	10.29	0.95	9.57	3.31
Superego				
Time 1	20.57	2.07	20.43	2.15
Time 2	20.29	1.94	20.86	1.95
Time 3	20.43	3.05	19.71	2.43
Self-Sentiment				
Time 1	22.29	5.02	21.88	5.46
Time 2	23.71	5.85	23.71	4.61
Time 3	22.14	4.02	23.86	6.12
Sweetheart-Spouse Sentiment				
Time 1	8.29	1.38	7.71	1.60
Time 2	8.00	1.92	8.43	2.22
Time 3	8.29	1.38	8.00	1.41
Expectations				
Time 1	14.43	9.78	25.71	1.80
Time 3	16.00	12.10	25.86	2.67
Developmental Beliefs				
Time 1	15.43	3.05	18.14	2.91
Time 3	17.43	2.15	18.00	3.00
Operant Beliefs				
Time 1	16.14	4.14	13.43	3.60
Time 3	13.57	6.27	11.57	2.51
Knowledge				
Time 1	34.29	5.41	27.14	4.78
Time 3	37.00	6.27	38.71	5.12

TABLE 21

Mean Scores of Mothers of At-Risk and Normal Children - Study Two

	Mothers of At-Risk Children		Mothers of Normal Children	
	Mean	S.D.	Mean	S.D.
Anxiety				
Time 1	31.89	11.18	32.43	9.94
Time 2	29.14	11.22	30.82	9.87
Time 3	28.96	12.86	31.64	11.61
Low Self-Control				
Time 1	5.57	2.95	6.11	2.83
Time 2	5.07	2.77	5.04	2.65
Time 3	5.39	2.74	5.57	2.71
Ego Strength				
Time 1	3.61	2.25	4.11	1.83
Time 2	3.14	2.14	4.50	2.35
Time 3	3.43	2.18	4.19	2.29
Guilt-Proneness				
Time 1	10.82	3.85	10.68	3.55
Time 2	10.32	3.30	10.14	3.05
Time 3	9.18	4.03	10.50	3.60
Tension				
Time 1	8.18	3.84	8.39	3.65
Time 2	6.93	4.06	8.18	3.89
Time 3	7.36	4.55	7.86	4.01
Career Sentiment				
Time 1	9.07	1.51	10.00	2.16
Time 2	9.25	2.15	9.75	2.22
Time 3	9.61	2.13	10.07	1.82
Home-Parental Sentiment				
Time 1	9.89	2.47	10.00	5.02
Time 2	10.11	2.39	10.75	1.78
Time 3	10.64	2.36	10.46	2.06
Superego				
Time 1	18.14	2.90	18.71	2.43
Time 2	18.54	2.77	19.50	2.80
Time 3	18.96	2.25	19.14	3.00
Self-Sentiment				
Time 1	23.04	2.97	21.57	2.70
Time 2	22.07	2.09	21.25	3.41
Time 3	21.04	3.00	20.89	2.74
Sweetheart-Spouse Sentiment				
Time 1	8.61	1.73	8.71	1.61
Time 2	8.00	1.36	8.79	1.66
Time 3	8.32	1.36	8.71	1.65
Expectations				
Time 1	24.57	2.92	24.86	2.19
Time 3	25.59	2.66	25.18	2.37
Developmental Beliefs				
Time 1	18.04	4.24	18.18	3.20
Time 3	18.39	4.53	18.89	3.41
Operant Beliefs				
Time 1	12.82	4.23	13.21	5.43
Time 3	12.00	4.40	13.57	5.04
Knowledge				
Time 1	36.11	6.56	33.75	8.73
Time 3	34.29	6.12	35.04	6.83

TABLE 22

Summary of Analyses for Effect of Repeated Testing - Study Two

	Repeated Testing Mothers (N=50)		Control Mothers (N=33)		*t*-tests	
	Mean	S.D.	Mean	S.D.	*t*	variance accounted for
Anxiety	26.76	13.79	29.50	9.76	.14	0.0%
Low Self-Control	5.18	2.83	6.06	2.92	1.32	21.0%
Ego Strength	4.0	2.54	3.74	2.53	.53	.3%
Guilt Proneness	9.74	4.28	9.47	3.18	.40	.2%
Tension	7.06	4.57	7.18	3.41	.14	0.0%
Career Sentiment	9.46	2.27	9.59	2.23	.54	.4%
Home-Parental Sentiment	10.28	2.10	10.24	2.35	.14	0.0%
Superego	19.42	3.04	18.85	3.30	.68	.6%
Self-Sentiment	22.00	3.43	23.36	2.74	1.69	3.4%
Sweetheart-Spouse Sentiment	8.58	1.67	9.03	1.59	1.22	1.8%
Expectations	25.26	2.16	24.47	1.83	1.76	3.7%
Developmental Beliefs	18.70	3.07	17.27	3.27	2.02*	4.8%
Operant Beliefs	12.06	4.14	12.48	4.39	.45	.2%
Knowledge	36.84	5.84	38.00	4.21	.93	1.1%

TABLE 23.

Mean Scores of Low- and Middle-SES Mothers

	Low-SES Mothers of				Middle-SES Mothers of			
	At-Risk Children		Normal Children		At-Risk Children		Normal Children	
	(N=6)		(N=6)		(N-36)		(N=36)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Anxiety								
Time 1	28.67	13.97	42.33	8.71	31.33	11.62	32.22	10.69
Time 3, 4	33.17	11.57	47.00	6.19	29.25	12.81	32.03	12.70
Career Sentiment								
Time 1	10.33	2.16	10.83	1.47	9.22	1.84	9.69	2.12
Time 3, 4	10.17	1.94	9.67	2.50	9.86	2.22	9.53	2.13
Home-Parental Sentiment								
Time 1	9.33	2.34	8.83	1.17	9.83	2.48	9.92	1.73
Time 3, 4	7.50	1.87	8.17	2.48	10.56	2.12	10.25	2.31
Superego								
Time 1	20.17	2.48	18.17	3.31	18.53	2.92	19.08	2.42
Time 3, 4	20.17	2.86	22.33	4.13	19.22	2.43	19.33	2.87
Self-sentiment								
Time 1	24.33	3.93	22.83	3.43	23.00	3.42	21.56	3.31
Time 3, 4	23.17	3.43	22.17	5.12	21.36	3.15	21.44	3.70
Sweetheart-Spouse Sentiment								
Time 1	5.83	1.60	6.33	1.75	8.50	1.65	8.47	1.63
Time 3, 4	6.00	2.10	8.00	1.79	8.25	1.40	8.61	1.61
Expectations								
Time 1	26.17	1.47	25.67	2.80	22.67	6.32	24.92	22.20
Time 3, 4	27.00	2.00	21.33	10.82	23.58	6.72	25.22	2.44
Developmental Beliefs								
Time 1	16.50	3.15	14.67	4.55	17.42	4.11	18.31	3.16
Time 3, 4	17.50	3.78	10.50	6.41	18.06	4.19	18.78	3.29
Operant Beliefs								
Time 1	16.33	3.78	17.17	6.68	14.08	4.72	12.78	4.13
Time 3, 4	17.33	5.24	14.83	8.28	14.22	4.70	11.86	4.02
Knowledge								
Time 1	28.00	7.56	26.50	4.42	33.81	6.49	35.47	6.37
Time 3, 4	26.00	13.19	22.67	11.64	34.83	6.19	36.53	6.26

VITA

Name: Nancy Ann Busch

Address: Human Development and Family Studies
Colorado State University
Fort Collins, Colorado 80523

Personal Data: Born: May 29, 1951
Citizenship: United States
Married, no children

Education:

1969-1972	Scripps College; B.A. Major: Child Psychology
1972-1973	Graduate Study: The Merrill Palmer Institute Area: Child, Family, Neighborhood
1972-1973	Wayne State University; M.A. Major: Human Development and Family Resources
1976-1979	The Pennsylvania State University; Ph.D. Major: Human Development and Family Studies Minor: Education of Exceptional Children

Professional Experience:

1979-	Assistant Professor of Human Development and Family Studies, Colorado State University
1976-1979	PrePAIR (Predoctoral Preparation in Applied Interdisciplinary Research) trainee, Bureau of Education for the Handicapped
1973-1977	Lecturer in Child Studies and Head Teacher, Parent-Toddler Program, University of Guelph

Honors:

1978-1979	Graduate School Fellowship, The Pennsylvania State University
1978	Elected to membership, Omicron Nu